No. 21775

IN THE

United States Court of Appeals

FOR THE NINTH CIRCUIT

MONOLITH PORTLAND MIDWEST COMPANY, a Nevada corporation,

Appellant,

vs.

KAISER ALUMINUM & CHEMICAL CORPORATION, *et al.*,

Appellees.

VOLUME II.
APPENDIX.

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VOLUME II.

APPENDIX.

Memorandum of Decision.

United States District Court, Southern District of California, Central Division.

Monolith Portland Midwest Company, a Nevada corporation, Plaintiff, vs. Kaiser Aluminum & Chemical Corporation, et al., Defendants. Civil No. 553-58-S.

This cause came on regularly for trial before the Honorable Albert Lee Stephens, Jr., Judge presiding, sitting without a jury. Enright, Elliott & Betz by Norman Elliott, Esq., appeared as counsel for plaintiff. Thelen, Marrin, Johnson & Bridges by Peter Anderson, Esq., and Fulwider, Patton, Rieber, Lee & Utecht, by William K. Rieber, Esq., appeared as counsel for defendants. Oral and documentary evidence was introduced by the parties and after oral argument, the Court ordered the cause submitted.

JURISDICTION AND PARTIES

Federal jurisdiction is invoked on the ground of diversity of citizenship and an amount in controversy, exclusive of interest and costs, of more than $3,000.00. [3560]* [This action was filed prior to the effective date of 28 U.S.C. §1332(b), as amended July 25, 1958.] There is no doubt that the amount in controversy was and now is in excess of $10,000.

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*Record page numbers indicated thus.

Jurisdiction as to the Sixth Cause of Action [patent infringement] is invoked under 35 U.S.C. §1338.

This is an action by Monolith Portland Midwest Company, a Nevada corporation, against Kaiser Aluminum & Chemical Corporation, a Delaware corporation, Kaiser Aluminum & Chemical Sales, Inc., a California corporation, and three Kaiser employees—George C. Davis, Palmer Ford and Pete Olive. [Palmer Ford is no longer employed by either of the defendant Kaiser companies.] On June 6, 1958, when the original complaint was filed, George C. Davis was a resident of California, Pete Olive was a resident of Washington, and Palmer Ford was a resident of California.

Plaintiff is a cement company. It owns and operates a cement plant at Laramie, Wyoming. Monolith Portland Cement Company [hereinafter called "Monolith"] which owns all of plaintiff's common stock, also owns and operates a cement plant in the Tehachapi Valley at Monolith, California, about 125 miles north of Los Angeles. Plaintiff and Monolith are joint venturers with respect to exploitation of the invention that is the subject of this action. Both companies maintain their executive offices at 643 South Olive Street, Los Angeles, California.

The defendant Pete Olive was never served with process and has never answered or formally pleaded herein. Plaintiff has contended that because of his contacts with the litigation, Olive has submitted to the jurisdiction of this Court. The Court ruled against this contention, and the action was therefore ordered dismissed as to Pete Olive without prejudice. [3561]

INTRODUCTION

In the first five counts, plaintiff claims a right to damages or compensation from defendants upon several legal theories. The sixth cause of action is for patent infringement which will be treated separately later. But other than patent infringement, plaintiff's chief reliance is upon the theory that plaintiff is entitled to damages for breach of confidence. The law on this subject is usually associated with trade secrets. A brief exposition will help to identify the issues of fact which are about to be discussed. The case turns upon the facts rather than upon fine points of law.

Plaintiff has preferred to use the term "valuable information" in place of the term "trade secret." The Court has adopted the use of plaintiff's terminology to avoid the impression that the plaintiff and the Court are not talking about the same thing.

If the plaintiff's claim were established, then, independent of plaintiff's claim of patent infringement, an award of damages resulting from that breach would be proper. *Englehard Industries, Inc. vs. Research Instrumental Corp.*, 325 F. 2d 347 (9th Cir., 1963).

The principle of law urged by plaintiff is stated in Sections 757, 758 and 759 of the Restatement of the Law of Torts. A trade secret may consist of a device or compilation of information used in one's business which gives him an advantage over competitors who do not know or use it. Generally it relates to the production of goods. It may be a device or process which is clearly anticipated in the prior art or it may [3562] be a mechanical improvement that a good mechanic can make. *Futurecraft Corp. vs. Clary Corp.*, 25 C.A.

2d 379, 23 Cal. Rptr. 198 (1962); *Sarkes Tarzian, Inc. vs. Audio Devices, Inc.,* 166 F. Supp. 250, 258 (S.D. Cal., 1958).

A trade secret need not reach the stature of an invention. *Hoeltke vs. C. M. Kemp Mfg. Co.,* 80 F. 2d 912, 922 (4th Cir., 1935) Cert. den. 298 U.S. 673, 56 S.Ct. 938, 80 L.ed. 1395 (1936); *Atlantic Wool Combing Co. vs. Norfolk Mill, Inc.,* 148 U.S.P.Q. 571 (1st Cir., 1966). In the latter case, Judge Hastie cites with approval Restatement of the Law of Torts, §757, Comment b:

> ". . . Novelty and invention are not requisite for a trade secret as they are for patentability. . . . The protection is merely against breach of faith and reprehensible means of learning another's secret. For this limited protection it is not appropriate to require also the kind of novelty and invention which is a requisite of patentability. . . ."

Although novelty in the patent sense is not a prerequisite for protection as a trade secret, the law requires substantial novelty. *Berry vs. Glidden Co.,* 92 F. Supp. 909, 912 (S.D. N.Y., 1950), and cases cited therein. "If the rule were not so restricted it is obvious that by disclosing an idea under delusions of confidence, the person making the disclosure could thereafter prevent the confidante (sic) from subsequently making use of it, even though the idea was well-known prior to the date of the disclosure and open to the use [3563] of all others in the world." *Smoley vs. New Jersey Zinc Co.,* 24 F. Supp. 294, 300 (D. N.J., 1938) Aff'd. 106 F. 2d 314.

It must at least be novel to the person receiving the disclosure. If the elements of the formula or pattern

are known to him prior to the disclosure, he cannot be restrained from using the same or compelled to account for any past use. *Berry vs. Glidden Co., supra.* A disclosure in confidence of a process which lacks the essential of novelty will defeat the allegation of an implied agreement to refrain from its use and plaintiff has the burden of establishing novelty. *Smoley vs. New Jersey Zinc Co., supra.* "[T]he word 'disclosures' itself implies that the things referred to were secret, concealed or unknown prior to the time of their revelation." *American Potato Dryers vs. Peters,* 184 F. 2d 165, 72 (4th Cir., 1950). *Lueddecke vs. Chevrolet Motor Co.,* 70 F. 2d 345 (8th Cir., 1934). In the latter case, the Court determined that if there was no novelty in plaintiff's suggested idea, it was one "to the use of which the defendant had an equal right with [plaintiff]."

Matters of public knowledge or of general knowledge in an industry are not secret. Some of the factors which may be considered in determining whether some particular information that has been given is a trade secret are: The extent to which the information is known outside the particular business, the extent of measures taken to guard the secrecy of the information, the value of the information to the one who discloses and to his competitors, the amount of effort or money expended in developing the information, and the ease or difficulty [3564] with which the information might be properly acquired or duplicated by others. *Mycalex Corporation v. Pemco Corporation,* 64 F. Supp. 420 (D. Md., 1946); Restatement of the Law of Torts, Comment, Section 757.

> "At best, a trade secret protects only during the period when others working in the same field do

not, in the ordinary course of their work, make the same discovery. Even in pure science where the problem situation is much more diffuse than in industrial research or development, there are many well authenticated cases of simultaneous discovery by persons or groups who and whose works were completely unknown to one another. . . . When it comes to a trade secret in manufacturing there is greater likelihood of simultaneous discovery: . . . This, . . . may result in parallelisms of action which may be fortuitous because they are inherent in the problem and in its solution, and not the result of conscious copying or imitation." *Sarkes Tarzian, Inc. vs. Audio Devices, Inc.,* 166 F. Supp. 250, 279.

The Restatement of the Law of Torts, §757, sets forth the general rule of liability in a case such as the instant one where a breach of confidence is charged:

"§757. *Liability for Disclosure or Use of Another's Trade Secret—General Principle.*

"One who discloses or uses another's trade secret, without a privilege to do so, is liable [3565] to the other if

"(a) he discovered the secret by improper means, or

"(b) his disclosure or use constitutes a breach of confidence reposed in him by the other in disclosing the secret to him, or

"(c) . . .

"(d) he learned the secret with notice of the facts that it was a secret and that its disclosure was made to him by mistake."

In the comment which follows the rationale behind this rule is stated: "It is the employment of improper means to procure the trade secret, rather than the mere copying or use, which is the basis of the liability under the rule in this Section. . . . One who discovers another's trade secret properly, as, for example, . . . by independent invention . . . is free to disclose it or use it in his own business without liability to the owner."

The confidence does not arise if the recipient has no notice of the confidential character of the disclosure. "But no particular form of notice is required. The question is simply whether in the circumstances [the recipient] knows or should know that the information is [the discloser's] trade secret and that its disclosure is made in confidence." Comment on Clause (b). *Lueddecke vs. Chevrolet Motor Co., supra.* Thus, one may not impose upon another, by a gratuitous and unilateral act a confidential relationship. *Official Airlines Sched. Inform. Serv. vs. Eastern Air Lines,* 333 F. 2d 672 (5th Cir., 1964), discussing analogous principle of disclosure [3566] of literary property. The principle is analogous to the contract theory requiring a reasonable "meeting of the minds" on essentials embodied in the contract."

There is no need for an express promise of trust with respect to the information disclosed. *Heyman vs. Ar. Winarick, Inc.,* 325 F. 2d 584 (2d Cir., 1963); *Speedry Chemical Products, Inc. vs. Carter's Ink Company,* 306 F. 2d 328 (2d Cir., 1962); *Trenton Industries vs. A. E. Petersen Mfg. Co.,* 165 F. Supp. 523 (S.D. Cal., 1958); *Hoeltke vs. C. M. Kemp Mfg. Co., supra,* cited with approval in *Filtex Corporation vs. Amen Aityeh,* 216 F. 2d 443 (9th Cir., 1954).

The elements of a cause of action based on the facts of the present suit are: (1) that there was a disclosure in confidence; (2) that the disclosure was of something novel; and (3) that the defendant appropriated the information disclosed to its own use. *Schreyer vs. Casco Products Corp.,* 97 F. Supp. 159 (D. Conn., 1951) *Mitchell Novelty Co. vs. United Mfg. Co.,* 199 F. 2d 462 (7th Cir., 1952) and cases cited therein; *Official Airlines Sched. Inform. Serv. vs. Eastern Air Lines, supra; Trenton Industries vs. A. E. Petersen Mfg. Co., supra.*

Whether or not there exists an atmosphere of confidentiality will depend upon the circumstances under which the parties' relationship was established and maintained. The question of fact to be determined is what the parties understood to be their relationship and the circumstances which might give rise to such an implied understanding. *Kamin vs. Kuhnau,* 374 P. 2d 912 (Ore. Sup. Ct., 1962). An important factor may be whether the information disclosed has such value that it may reasonably be implied that the recipient of the information is not [3567] privileged to use it for his own profit. Or, the disclosure may have been entrusted for a limited purpose only, thus giving rise to a strong implication that any other use would violate the true intent of the parties. *Atlantic Wool Combing Company vs. Norfolk Mills, Inc.,* 148 U.S.P.Q. 571 (1st Cir., 1966); *Servo Corporation of America vs. General Electric Company,* 337 F. 2d 716 (4th Cir., 1964); *McKinzie vs. Cline,* 252 P. 2d 564 (Ore. Sup. Ct., 1953), relied upon in *Radiator Specialty Company vs. Micek,* 327 F. 2d 554 (9th Cir., 1964); *Smith vs. Dravo Corp.,* 203 F. 2d 369 (7th Cir., 1953). Promis-

cuous disclosures, or a simultaneous or prior disclosure to others, may defeat one's claim of confidentiality. *Northup vs. Reish,* 200 F. 2d 924 (7th Cir., 1953); *Smith vs. Dravo Corp., supra.* One of the most frequently appearing citations on this issue is taken from *DuPont de Nemours Powder Co. vs. Masland,* 244 U.S. 100, 37 S. Ct. 575, 61 L.ed. 1016 (1917), wherein Justice Holmes states:

> ". . . Whether the plaintiffs have any valuable secret or not the defendant knows the facts, whatever they are, through a special confidence that he accepted. The property may be denied, but the confidence cannot be. Therefore the starting point for the present matter is not property or due process of law, but that the defendant stood in confidential relations with the plaintiffs, or one of them." (37 S. Ct. 575 at page 576.) [3568]

The first phrase of the statement must, of course, be read in context of the motion for preliminary injunction which was before the Court. Having recognized that what was claimed to be a secret was communicated in confidence, the Court maintained the *status quo ante* until the cause could be determined upon its merits. See *McGraw-Edison Co. vs. Central Transformer Corp.,* 308 F. 2d 70, 74 (8th Cir., 1962).

There is little need to carefully distinguish between plaintiff and Monolith. The agents and employees of both companies figure prominently in the picture and the two companies are joint venturers in the exploitation of the patent in suit. A distinction is made when it seems to be reasonably necessary.

The principal defendants are named Kaiser companies and it is generally unnecessary to draw a distinction between the defendants, including the individuals, or between the two companies. Sometimes a distinction is noted. The term Kaiser has been used to denote both defendant companies. [3569]

Kaiser manufactures and sells bricks which are used to line the inside of steel-shelled cement kilns to protect the steel from heat and abrasion. One such product is now sold under the trade name Unitab. Plaintiff claims that the information necessary to develop the Unitab was the subject of a confidential disclosure from plaintiff to defendants.

The Unitab is a conventional basic refractory brick with a piece of cardboard glued to one end and an L-shaped steel plate covering part of the top of the brick and extending down one side to within a half inch of the bottom of the brick. The L plate is glued on. The steel plate is called a shim and since it does not extend to the bottom of the brick, it is called a short shim. Plaintiff claims that leaving the one-half inch space between the end of the steel plate and the bottom of the brick is the employment of information confided by plaintiff to Kaiser. Plaintiff claims compensation from Kaiser on the ground that otherwise Kaiser will be unjustly enriched and damages from Kaiser for disclosure of plaintiff's valuable information to the world. Plaintiff also claims that the Unitab is an infringement of a patent obtained by an employee, Anderson, and assigned to plaintiff.

The case, therefore, divides itself into two parts, the non-patent counts and the patent count. An explana-

tion of the operation of a cement kiln in the making of Portland cement is a preliminary to any discussion of either part. A patent issued to Thomas A. Edison in 1905 is a convenient starting place for explanation of the cement process and references to later patents in this field traces the development of knowledge in the art and industry. [3570]

One leg of plaintiff's case is a misinterpretation of the disclosures of certain of the early patents, notably those of Heuer and Longacre. Plaintiff asserts that these patents teach that the spacer plates used between the bricks must be in full contact with the shell of the kiln. These patents teach exactly the opposite, that it is not necessary for the spacer plates to contact the shell. Plaintiff reasons that the burning zone in the cement kiln is the higher temperature installation referred to by these inventors for which they recommend that the plate contact the shell. The discussion on this subject will demonstrate plaintiff's error. Industry's knowledge and practice in the use of shims prior to the time of plaintiff's first claimed disclosure is next discussed.

The confidential disclosures are claimed to have been made from time to time through Kaiser salesmen, but three conferences are chiefly relied upon. Each is discussed in turn. Exactly what information is claimed to have been disclosed is not easy to define or pin down. Kaiser's claims that plaintiff had no such information to disclose and that Kaiser already knew as much about the subject as plaintiff and sufficient to develop the Unitab are at issue.

Part of the information which plaintiff communicated to defendants is that by the use of its short ra-

dial shim, plaintiff had increased production and lining life. Kaiser contends that this was a knowing misrepresentation of fact. Plaintiff contends that what was known about [3571] the radial shim was applicable to the kind employed by the Unitab. Kaiser denies this.

Even assuming the communication of the information, Kaiser's position is that there was nothing confidential about it. Kaiser admitted in a letter that certain information was confidential. Plaintiff construes this instrument as little short of a confession of judgment. It was written at a time when the parties were engaged in discussions concerning a license from plaintiff to Kaiser to practice plaintiff's invention. The patent had not yet issued and Kaiser had not been shown either the application or a disclosure of its contents. Kaiser contends that the negotiations were at arm's length, rather than confidential and that in context the letter referred only to plaintiff's radial short shims, which are not used by Kaiser.

After the greatest care in consideration of the voluminous record and great quantity of exhibits, the Court's view of the evidence is opposed to the position taken by plaintiff in almost every instance. The length and detail of this Memorandum of Decision is to avoid misunderstanding as to the Court's position and to make plain the supporting reasons. [3572]

THE PROCESS OF MAKING PORTLAND CEMENT

This case revolves around the process of making Portland cement. This product may be made from many different materials which are abundantly available. The chemistry of the process varies with the material used and also with the properties desired of the finished product. The mechanical processing of the raw materials into the finished product is basically the same for all materials and finished products.

There are two processes known respectively as the dry process and the wet process. A description of the wet process will furnish sufficient background for discussion of the factual issues before the Court. The raw materials are crushed or ground to predetermined fineness and uniformity. Water is added until the mixture is of the desired consistency. This mixture is then referred to as slurry or feed.

The slurry is introduced into the upper end of an inclined, rotating tube, which is the kiln. As the tube is rotated, the slurry makes its way to the lower end. In the course of passing down the tube, the slurry is heated by means of hot gases passing from the lower to the upper end. The hot gases drive off the water in the slurry and eventually what passes from the lower end of the tube or kiln is sintered clinkers. These are then ground to a fine powder which is the principal ingredient in the finished product, the familiar sack of Portland cement. [3573]

Rotary cement kilns were at one time approximately five feet in diameter and sixty feet long. The patent art which is in evidence shows that on October 24, 1905, Patent No. 802,631 was issued to the great and well-known inventor, Thomas A. Edison. The patent describes apparatus for burning Portland-cement clinker. This patent describes the huge rotary cement kiln which is the machine used today in manufacturing cement.

Mr. Edison pointed out that he had discovered that the proportion of diameter to length of a rotary cement kiln should be one foot of diameter to twenty-seven feet of length, rather than the formerly accepted ratio of one to twelve. He recommended that diameters should be increased to not less than five and one-half feet. He learned by experiment and taught in his patent that the amount of the load (slurry) bears a definite relation to the internal diameter of the kiln and that "it may be considered as axiomatic in this art that the greater the load that can be carried in a kiln of a definite size, the greater will be the economy." He recommended increasing the length of kilns to one hundred and fifty feet. He did not consider it practical under then existing conditions to substantially increase this length, owing to the great expense which would thereby be involved.

Edison spoke of the dry process which differs from the wet process in that dry material, rather than wet slurry, is introduced into the kiln. Even the dry material contains considerable moisture which must be [3574] driven off. The greater ease of handling, mixing and preparing materials in the form of slurry no doubt accounts for great popularity of the wet process even though this necessitates a longer exposure to heat

to eliminate the additional moisture and, hence, requires a longer kiln.

These principles won acceptance in the cement industry, which, undaunted by the great expense involved, constructed mammoth rotary cement kilns eight, ten, twelve and fifteen feet in diameter and up to five hundred feet in length.

The slurry undergoes chemical and physical changes as it passes down the length of the kiln which makes it convenient to divide the kiln into zones in which these changes take place. The slurry is first dried in the Drying Zone, where temperatures rise to as much as 1800°F. It then passes through the Intermediate Zone, where temperatures may rise to 2400°F. In the Intermediate Zone it goes through a calcining process and then enters the Burning Zone, the maximum temperature of which is between 2600° and 2900° F. The Burning Zone in a kiln with a diameter of twelve feet is likely to be approximately 60 feet long. A short Cooling Zone follows the Burning Zone and the load, now reduced to clinker and slightly cooled, passes out of the kiln. The upper end of the kiln where the slurry is introduced is sometimes called the wet end and the other is sometimes called the hot, dry or discharge end.

The heat required is supplied by a flame which enters the discharge end. The flame usually burns powdered coal, oil or gas. Despite the simplicity of basic concept, the bulk of the machinery and the heat [3575] required introduce problems in practice. The rotating tube through which the load must pass is made of steel and lined with bricks. The steel tube is the kiln's shell and the bricks constitute part of the lining. This lawsuit is chiefly concerned with the lining of the Burning

Zone where the greatest heat is applied. Of course, a balance must be maintained which is well expressed by inventor Edison in the specifications of his patent in the following manner:

> "It may be stated axiomatically that the burning of Portand-cement clinker should be characterized by the perfect combustion of the minimum relative amount of fuel in the presence of the maximum relative amount of cement material for a sufficient time to result in the complete clinkering of the latter."

After the lining has been installed and the kiln is heated sufficiently, the slurry is introduced and when it reaches the Hot Zone, it forms a coating on the bricks several inches to even a foot or more in thickness. Mr. Edison had observed that when the cement material has reached a heat to make it somewhat plastic and sticky, it forms a coating several inches in thickness. This coating adheres to the bricks and becomes a part of the lining over which the load passes in the process of sintering and forming clinker. The surface of the coating exposed to the fire is hotter than the surface of the bricks to which the coating adheres. The coating insulates the bricks from the highest temperatures and protects them from abrasion and heat. The coating is constantly being burned [3576] or melted off and at the same time reforming to maintain a rather constant thickness. If the coating is lost in part or in its entirety, the bricks deteriorate rapidly where exposed until additional coating is acquired or the exposed lining fails and must be replaced. Sometimes a lining can be repaired by patching, but eventually every lining must be replaced.

Once a kiln is placed in operation, it is run continuously for as long as possible. Sometimes the chemical content of the slurry is changed during the operation of the kiln to meet the demands for cement of different characteristics. Such a change usually requires a modification of the operation of the kiln such as a different speed of rotation or an adjustment of the flame to change the burning temperature to achieve as nearly perfect sintering of the product as possible to make the clinker as nearly perfect as possible. Sometimes it is necessary to shut the kiln down for repairs or because raw materials are not available or because there is no immediate demand for more of its product. Changes in burning temperatures or cooling of the kiln in a shutdown will subject the lining to destructive stresses due to the expansion and contraction which accompanies such temperature changes.

While perfect sintering of a load of one chemical composition may require adjustments in the operation of a kiln which has been processing a load of a different chemical composition, the temperature required for sintering is approximately 1500° C. or 2732° F. as pointed [3577] out by Josef Berlek in the specification of Patent No. 2,148,054 which was issued to him on February 21, 1939. In the year 1905, Mr. Edison pointed out that the rate of progression of heat from the periphery to the center of a partially-clinkered ball or other mass is practically fixed and is but slightly altered by raising the temperature to which the mass is subjected and that it is necessary to allow sufficient time at the sintering temperature for the process to be complete. He further observed that by increasing the time during which the material is subjected to clinkering temperature, better results are secured, even if the

temperature is actually somewhat reduced from the temperatures which had been applied when the material was exposed for a shorter time in shorter clinkering zones than he recommended. He also observed that a slow but gradual increase in temperature of the load permits the reactions to take place slowly so that when the material reaches the combustion zone a comparatively slight increase in temperature is necessary to clinker the same. These observations have generally been borne out even though the temperatures to which he referred were lower than 2732° F. and improved chemical mixes used later required a slightly higher sintering temperature. But the temperature at which cement clinker is formed is fixed by the compositions used within known limits. Higher temperatures produce a molten mass rather than clinker. [3578]

Leopold Tschirky of General Refractories Company presented a paper before the Technical Committees of the Portland Cement Association at Bethlehem, Pennsylvania on September 19, 1944. (See Exhibit BX.) Mr. Tschirky noted that in the early days of the rotary cement kiln, temperatures rarely exceeded 2400°F. but he conducted experiments with modern materials which sintered perfectly at 2800°F., which he considered a high temperature. This is not far from the sintering temperature of 2732°F. observed by Berlek.

In Exhibit 585, which is a report to plaintiff of certain experiments conducted at plaintiff's request, an explanation of the manufacture of clinker is tendered by expert witnesses Robert H. Bogue and Ira C. Bechtold. Both were called to testify by plaintiff and explained the processing of raw materials into cement clinker. They say that at about 2350°F. the first

appearance of liquid in the material occurs. This is the temperature of the lowest melting eutectic. When materials of certain composition are together in the presence of heat, they react chemically and form a substance which melts at a temperature which is lower than the temperature which would be required to melt the individual substances when not in the presence of each other. The new substance which melts is known as eutectic. When additional heat is applied to the [3579] material forming the eutectic, the temperature of the material remains constant until all of the liquid of that eutectic composition is formed that the composition of the mixture makes possible.

Thereafter, the addition of more heat will cause the formation of a second eutectic which again remains constant during the formation of the second eutectic composition. This sequence is repeated up to the highest temperatures encountered. The process proceeds very slowly with the chemical changes which are necessary for sintering taking place in the various successive eutectics until the increase in the temperature of the load approaches 2500° to 2700°F. At that temperature an exothermic reaction commences. This is a reaction in which heat is given off from the reacting mixture, resulting in a sudden glow as the components interact and raise their internal temperatures by 200° to 400°F. The ignition temperature of the exothermic reaction must be maintained until the exothermic reaction is complete in order to complete the sinter and produce perfect clinker. During this last reaction the temperature of the sinter is considerably above the temperature of the coating which is the part of the lining supporting the load.

The way the necessary heat is supplied to the load was described by Bogue and Bechtold and other witnesses. The hot gases supply some heat to the load by radiation and convection from both the flame and the lining, the top layer of which is the coating. This radiation [3580] heats the surface of the load but the bulk of it is below the surface and receives most of its heat from the lining as the rotating kiln passes beneath the load turning it in a manner which may be likened to the mixing action of the familiar rotary cement mixer. Since the load is in the trough of the cylindrical kiln, being drawn up only slightly by the rotation, any given point of the innermost portion of the lining, the coating, is exposed to the flame from the time it passes from under the load through the rotation until it again passes under the load. During this period it takes on heat increasing in temperature as much as 400°F., but still 200° to 400°F. lower than the temperature reached in the exothermic reaction, and then surrenders it to the load as it passes beneath. So the coating of the lining contributes most of the heat acquired by the load.

It is apparent that where proper clinker has been produced, the process above described has taken place whether it was understood in those terms or not.

THE REFRACTORIES WHICH LINE THE KILN

The lining of the kiln described by Edison consisted of bricks of fire clay placed over a layer of asbestos. His purpose in employing the asbestos was to reduce radiation through the shell and offer a yielding backing for the fire bricks. Fire brick linings had a short life and the industry soon turned to other refractories, the principal composition of which was alumina. Al-

though an improvement, the search for better linings continued both by improvement of the quality of alumina refractories and by the development of a refractory brick [3581] known as a basic brick because of its chemical composition. By chemical contrast, the alumina refractory is an acid brick.

Basic bricks differ from acid bricks in certain of their physical characteristics. They are more conductive of heat, or to state it conversely, they are less insulating than acid bricks. They are more refractory than acid bricks. This means that they are more resistant to abrasion and they can successfully withstand exposure to higher temperatures. The ability to withstand exposure to higher temperatures than acid bricks in a cement kiln is partly due to the physical and partly due to the chemical characteristics of the basic brick.

Various materials which are chemically basic may be used to form basic bricks. Which material is best suited to a particular application depends upon the conditions surrounding such application or perhaps even upon individual preference. They are supplied in two forms, burned and unburned. The bricks are formed in a mold under great pressure. After being formed, they may be supplied to the cement manufacturer without further processing, in which case they are referred to as unburned. On the other hand, they may be formed and then fired before being supplied to the cement manufacturer, in which case they are known as burned brick. When unburned brick are installed in the cement kiln, the heat of the cement kiln fires the brick resulting in what is ultimately a lining of burned brick. When an unburned brick is fired it contracts or shrinks to a certain extent and after undergoing this

change, expands in response to the application of heat and contracts when the heat is withdrawn. [3582]

Whether acid or basic bricks are used depends upon the conditions which exist in any particular kiln. Acid bricks are preferred by cement manufacturers in certain applications, but the use of basic brick in the burning zone has grown until the use of this form of refractory predominates in the cement industry, although it has not entirely replaced the acid refractory.

The relatively greater expansion and contraction characteristic of basic brick presented a special problem in practice. When the refractory lining is installed in the kiln, the bricks employed may be one of various shapes and sizes, the choice of which depends upon many factors of kiln operation or even personal reference of the operator. They are also installed in various ways, but understanding of one form of construction will be sufficiently illustrative. This form of construction employs bricks placed in circumferential rings in the kiln, one ring following another until the entire shell of the burning zone is covered by bricks. The portion of the brick resting on the shell is wider than the portion facing the interior of the kiln by an amount necessary to turn the circle. The part of the brick against the shell is called the cold face and the portion facing the interior is called the hot face because it faces the fire. Each brick is therefore slightly pie-shaped and each supports the other as they are rotated.

Provision must be made for the expansion of the brick as they are heated. This is accomplished by placing a metal plate between each brick in the ring. Longitudinal expansion of the series of rings is provided for by placing combustible material between the rings.

The practice is to [3583] place a cardboard spacer on the end of each brick to separate it from the brick in the next ring. Steel plates have generally been used between the bricks in the ring. A certain number of combustible spacers are also added in the ring for expansion. The ring is tightened by driving a few additional steel plates into the ring after the bricks have been initially laid up. The use of spacer plates is as old as the use of basic refractories in rotary cement kilns. The plates are called shims.

As the kiln is heated, the combustible spacers burn out, the bricks expand and the steel plates fill the space between the brick. The plates then oxidize for a certain distance from the hot face, one to two and one-half inches. When this oxidation takes place, the oxidized portion of the shim is no longer metallic. The resulting ferrous oxide or iron oxide combines with a portion of the adjacent refractory in such a way as to weld or knit the wall into a unitary structure or monolith. The reaction which creates the material forming the weld takes place at approximately 2300° F. When the reaction is complete, this substance will not slag or melt until the temperature is increased beyond the maximum temperature encountered in cement kilns. While minute fractures in the brick occur as a consequence of expansion due to heat, the oxide bond tends to hold them in place. These effects were noted by Morlock in his Patent No. 2,125,192, which was issued July 26, 1938, and by Griffith in his Patent No. 2,192,642, issued March 5, 1940. [3584]

The formation of the iron oxide and a resultant bond between the bricks were noted by Berlek in Patent No. 2,148,054, issued February 21, 1939, and by

Heuer in Patent No. 2,154,813, issued April 18, 1939. Heuer also noted that in use, as the refractory wears away from whatever cause, more and more of the metal shim will oxidize and continue to supply the bonding action which results in a monolithic structure. The metallic portion of the shim continues to be separated from the hot face of the brick by the oxide or the material resulting from action of oxide and brick, regardless of the thickness of the lining at any particular time. This is well supported by other evidence adduced in this action, including both testimony and cross-sections of used basic linings which show the oxide bond extending from the hot face, the partially oxidized shim, and finally what remains of the metallic shim nearer the cold face.

TEACHINGS OF PATENTS RELATING TO ROTARY KILN LININGS

In 1941 two patents were issued and assigned by the inventors to General Refractories Company. One stated purpose was to restrict heat transfer from the lining to the shell while retaining the benefits of oxidizable metallic shims which result in the formation of the monolithic structure attainable through the use of basic brick and steel shims. It will be recalled that in 1905 Edison recognized the value of insulating the lining from the shell to prevent heat loss and suggested an intervening layer of asbestos between his fire clay brick and the shell. With the use of basic brick which conducts heat more rapidly than acid refractories, the greater importance of [3585] this objective is apparent. Edison valued the cushioning effect of the asbestos which would permit his fire clay brick to move.

By contrast, if the value of the monolithic structure attained by basic brick and steel shims was to be retained, the movement of the basic brick was to be avoided because movement would result in breaking the joints between the basic brick.

Heuer in Patent No. 2,230,141, issued January 28, 1941, proposed to furnish insulation for the basic brick by means of a composite brick composed of acid brick in contact with the shell supporting an attached basic brick with its hot face exposed to the fire with an attached metallic shim which would extend over one of the side faces of the basic portion of the composite article. The shim would be out of contact with the shell. Heuer explains that linings having an insulating layer of acid brick one inch to two and one-half inches thick laid against the shell over which is positioned a basic brick lining with metal shims were used successfully. In such an installation the shims would not contact the shell. These linings were of short life due to a shifting of the layers with respect to each other resulting in crushing of the softer acid brick layer and loss of lateral support for the basic brick. His composite brick avoids this hazard by furnishing solid columnar support.

Heuer states that the rotary kiln lining which is his invention is intended for cement kilns, but also for calcining kilns used in the preparation of ores, building materials and the like. Kilns used for calcining in the [3586] preparation of ores do not take on a coating as do cement kilns. The hot face of the refractory is not protected in such kilns while the hot face of a refractory in a cement kiln is protected by the coating which takes the brunt of the abrasion and the

heat. The hot face of the refractory in the cement kiln is therefore not subjected to the full heat of the kiln, while those used for calcining ores are fully exposed. Compared to the temperatures of the hot face of the refractory in a cement kiln, the temperatures endured by the coating in the same kiln are high. Moreover, the temperatures of ore calcining kilns operating without a coating are themselves very high in relation to the highest temperatures to which a cement kiln coating is subjected. An example of kilns operating at very high temperatures compared with cement kilns are kilns used in the production of magnesia which operate at temperatures as high as 3300° F. See Exhibit 73 and the top of page 5 of Exhibit 68. The evidence also indicates that the magnesite kilns at Cape May, New Jersey, operated at temperatures of 3050° F.

In Austrian Patent No. 148,268, published January 11, 1937, the temperatures in cement kilns are compared with the temperatures to which refractory linings employed in other uses are subjected. The following observation is material to the subject of very high temperatures:

> "In metallurgical processes, such as steel production, where very high temperatures occur, a melting or sintering of the bonding agents between the brick, and sometimes even a slagging of the brick, takes place, producing a strong bond. The temperatures prevailing in cement [3587] kilns, however, are insufficient to produce a slagging together of the brick or a melting of the bonding agents, which explains the lower resistance of the lining."

The bonding agents referred to were identified, including among them steel shims placed between the brick with reference to which the following comment was made:

> "All these bonding agents melt or sinter at the temperatures which, for example, are reached in steel making, whereas they are not heated to melting or sintering at the temperatures which occur in cement kilns."

Heuer states that where very high temperatures are used with his composite refractory article it may be necessary to keep the rear end of the spacer plate in contact with the metallic shell to sufficiently cool the spacer plate by conduction of heat and prevent the unoxidized rear portion from melting out. Read in context with the remainder of the specifications, the very high temperatures referred to are not those encountered in a rotary cement kiln, but those encountered in the other uses in which he proposes his composite refractory article should be employed. He is addressing himself to those skilled in the relevant art to whom it is a well known fact that the temperatures required and employed in the sintering of cement clinker are relatively fixed. The suggested composite refractory without the shim extending to the shell is a design expressly intended to be used in burning zones of cement kilns and to face their required temperatures. When the inventor, who has suggested other [3588] applications for his invention, refers to very high temperatures, he means very high temperatures in comparison to those normally encountered in cement kilns. In other words, he refers to temperatures encountered in rotary kilns used for purposes requiring very high temperatures

compared to the temperatures encountered in cement kilns.

With practically the same objectives in mind as those which motivated Heuer, Longacre proposed to construct a lining made from legged bricks which would reduce conductivity of heat to the shell by exposing less surface of the cold face of the brick to contact with the shell, and also providing space for insulating inserts, if desired. He was granted Patent No. 2,230,142 on January 28, 1941. When basic bricks of the suggested construction are used, he recommends a metal spacer plate for the same reasons that such plates had theretofore been used, but only extending toward the cold face to where the legs commenced. He notes:

> 'From the standpoint of reducing heat losses, it is preferable to terminate the spacer plate . . . above the legs . . . and thus avoiding metal to metal contact between the spacer plate and the metallic shell. This has the disadvantage, however, that cooling of the spacer plate by heat conduction is restricted. For higher temperature installations, it is desirable to have metal to metal contact between the metallic spacer plate and the shell to prevent melting out of the unoxidized portion of the metallic spacer plate." [3589]

The same observation as made with respect to Heuer's suggestion concerning "higher temperature installations" is equally applicable to the quoted reference to higher temperature installations. It is important to note that the proposed metal to metal contact is in effect a legged shim which restricts the metal to metal contact of the plate with the shell to only a small portion of the cold face of the shim.

On February 11, 1941, a patent was granted to Geistler numbered 2,231,498. The inventor recognized the value and function of shims placed between basic bricks in rotary kilns and the resultant tendency to form a monolithic structure. However, he further observed that a solid plate oxidizes during slow heating up of the furnace at temperatures far below the melting point of the metal and that this is accompanied by an increase in volume of material between the bricks over the original thickness of the plate. This, he says, causes a considerable increase in stresses to which the bricks are subjected.

Geistler also notes that perforated iron sheets are known but that these, too, furnish sufficient expansion when oxidation occurs to subject the brick to undesirable stresses. He proposes wire mesh as a suitable solution and points out that sufficient oxidation occurs to create a monolithic structure when the kiln is heated. He claims all of the benefits of the steel plate without certain specified disadvantages. The netting oxidizes for a distance from the hot face and the rest remains practically unaffected until, as the brick becomes thinner by use, the [3590] oxidized portion works down the wire net shim toward the cold face of the brick.

It is worthy of note at this point that such a shim has no substantial metal to metal contact with the steel shell.

The argument which is made on behalf of plaintiff that Heuer '141 or Longacre '142 taught by implication or otherwise that if a conventional basic brick should be used in a rotary cement kiln, a full metal plate should be used with metal to metal contact in order to achieve or promote the oxidation of the shim from the hot face and

the accomplishment of the monolithic structure effect, is entirely fallacious. On the contrary, the teaching is that there is no need for such a shim to be in contact with the shell in a cement kiln. In making this fallacious argument, the pertinent language of the patents is not quoted in full. The purpose for extending the shim to the shell for higher temperature installations is stated in the patents to be to prevent the unoxidized rear portion from melting out. As already observed, such a purpose is inapplicable to cement kilns because temperatures high enough to melt out this portion of the shim are not achieved in rotary cement kilns.

The paper (Exhibit BX) of Mr. Tschirky of General Refractories Company, which was read in 1944 before the Technical Committees of the Portland Cement Association, pointed out that in 1939 a section of ten feet six inches long in the hottest portion of a cement kiln was lined with refractory articles which he described. From the description, this portion of the lining was composed of Longacre '142 brick with shims which stopped where the legs begin. [3591] For convenience in referring to various patents, sometimes only the last three numbers of the patent are noted. He states that this lining was found to take on protective coating just as readily as an uninsulated lining and just as good a coating. The insulated portion of the lining performed satisfactorily in every respect and had a life of 655 actual operating days, the same as the life of the uninsulated sections. The outside shell temperatures were measured in the areas carrying the insulated portion of the lining and compared with the temperatures measured on the outside shell of an uninsulated lining. The insulated lining ran on the average 100° F. cooler than the uninsulated one.

Tschirky also reported on two lining installations of what he considered an improved product. His description matched the composite article described in Heuer '141. The first did not last long, due to unrelated causes, but the second gave a good account of itself, lasting 392 actual operating days. Further development at that time was inhibited by the advent of World War II. The importance of this report is that it is a part of the literature of the cement industry, free for all concerned to evaluate. Among those who were familiar with its contents were two witnesses at this trial, Woodward of Southwestern Portland Cement Company, who saw the article between 1946 and 1948, and Bogue, who was present when the paper was originally read. Tschirky is a well respected and widely recognized authority in the refractories and cement manufacturing industries. [3592]

In 1948, Woodward saw a basic brick lining installed at Southwestern Portland Cement Company using Onival perforated shims. These shims had holes in them along the cold edge as big as a half dollar. This configuration of shim reduces the amount of metal which could conduct heat to the shell and therefore restricts the conduction of heat to the shell by the shim. This particular form of heat transfer restriction by means of the shim was commercially available and commercially used in 1948.

At this point in the development of rotary cement kilns, patents had been granted teaching that it was desirable to restrict the transfer of heat from the lining to the shell and employing shims which either did not touch the shell or were designed so that so little of the metal touched the shell that the result was practically

the same. Furthermore, there was other respectable authority for the proposition that linings so constructed were successful.

DEFENDANT KAISER'S KNOWLEDGE OF KILN LINING ART

The extent of Kaiser's knowledge in 1953 of the design, operation and lining of rotary cement kilns is evidenced by the fact that in the ten years Kaiser Aluminum and Chemical Corporation had been manufacturing refractories for the cement industry, it had achieved a substantial success and commanded a substantial portion of the market for rotary cement kiln refractories. A related Kaiser company manufactured Portland cement and its knowledge and experience were freely available to the defendant Kaiser companies. It is further evidenced by the advice which was offered to its customers in the form of instructions on the use of its products and particularly regarding the lining of rotary cement kilns with its product. [3593]

With particular reference to the issues of this case, there is evidence consisting of a Kaiser interoffice memorandum dated February 14, 1944, Exhibit BW and also marked 101, on the subject of "Changes in rotary kiln brick shapes to reduce temperature of rotary kiln shell." This memorandum commences, "Rotary kilns at the cement plant lined with milpitas brick are operating with a higher exterior shell temperature than usual. This condition is not desirable." Attached were various drawings illustrating all suggested changes from various sources available as of that date. Among other drawings is one labeled, "Heuer Patent 2,230,-141," and another labeled, "Longacre Patent 2,230,-142." Plaintiff argues that this drawing relative to

Heuer shows a full shim touching the shell. Since the drawing does not closely conform to any of the figures shown in the referenced patent, it is impossible to tell whether it was intended to indicate a full shim or one which extended only to the insulating portion of the Heuer composite article. Suffice it to say that the memorandum indicates that Kaiser personnel examined both of the patents referred to concerning a solution to the problem at hand.

In the early months of 1953, Miss Lloyd, a patent agent and full-time employee of Kaiser, studied both of these patents in preparation of the Wilkins patent which was filed March 27, 1953. Persons skilled in the art and patent attorneys skilled in the examination of patents and charged with the duty of reviewing and preparing patents in the same field could hardly overlook or fail to understand the teachings and significance of these patents, including: [3594]

1. That it was desirable to restrict the transfer of heat to the shell, a fact already recognized independently;

2. That a shim extending to the shell was not necessary for successful operation; and

3. That leaving a space between the shim and the shell would aid in inhibiting such transfer of heat to the shell.

THE FUNCTION OF METAL SHIMS

In 1953 Kaiser had not tried to install a lining with a shim which did not have contact with the shell. It had the teachings of the Heuer and Longacre patents, but no experience or demonstration as to the validity of the teachings. Neither did the plaintiff.

Kaiser's practice at this time was to offer written kiln construction advice to its customers. The drawings accompanying the text showed full shims placed between each brick in the ring and resting against the shell. Kaiser's salesmen would sometimes be present and offer similar advice. There is no doubt but that a lining constructed as suggested would result in full shims with their cold edges in metal to metal contact with the shell.

Some of Kaiser's personnel told customers that there was an advantage to having the shims rest upon the shell in that the shim would drain heat from the hot face of the brick, thereby cooling the hot face and that this aided in obtaining and retaining the coating, or at least that longer kiln lining life was promoted by conduction of heat through the shims to the shell. Although the term is somewhat misleading, this idea has been referred to in this lawsuit as "cooling the coating." Witnesses from plaintiff's [3595] organization told of discussing this concept. None of the Kaiser literature which was distributed to customers contained any reference to this theory by the term, "cooling the coating," or otherwise.

The cooling the coating idea may have had its origin with the use of alumina refractories. In the presence of heat and the materials which are to be formed into cement clinkers, which materials are basic in character, alumina refractories are fluxed and a slag is formed on the hot face of the alumina brick at temperatures below those required for sintering the material. When this occurs a coating commences to form and as it grows in thickness, it protects the hot face of the refractory from the heat of the furnace to the extent

that the temperature at the hot face of the brick is lower than the temperature required to cause slagging. If the temperatures of the kiln subsequently rise to the point where the heat which penetrates the coating is sufficient to again cause slagging at the hot face of the brick, the bond between the brick and the coating weakens by becoming liquified and there is danger of losing the coating. It is then necessary to reduce the temperature and cool the coating to bring a stop to the slagging by reducing the temperature at the juncture of coating and hot face of the brick to prevent the coating from slipping off. If the temperature is not reduced, slagging will continue until the bricks become so thin that they are cooled by loss of heat through the shell, stopping the slagging and permitting a coating to reform. [3596]

Basic brick are not fluxed by the cement material sufficiently to slag at even the highest temperatures employed in a cement kiln. The coating is formed anyway, sometimes aided by the presence or application of iron or iron particles or iron oxide, which in the presence of heat causes a sticky substance to appear on the hot face of the basic brick and promote formation of a coating. As soon as the coating forms, it provides insulation. The point of junction between the coating and the hot face of the refractory is cooler than the surface of the coating due to the insulating feature of the coating itself. While there is no danger of slagging the basic refractory at temperatures attained in a cement kiln, it has been asserted that the sticky substance which originally caused the cement material to adhere to the brick to commence the formation of a coating might again liquefy and cause loss of the lining. The evidence indicates that this substance

may be a liquefied form of iron oxide or eutectic formed by the cement materials during the clinkering process.

Basic brick may lose their coating, but generally from causes such as severe fracturing of the hot face of the brick and spalling, a dropping away of the fractured particles, which weakens or destroys the bond between the coating and brick. Some fracturing of the brick always occurs under normal conditions, but at an acceptable rate, permitting the particles to be absorbed into the coating without endangering the bond between the brick and the coating. Fracturing of the hot face is caused by the pressures and stresses which occur as the bricks expand against each other. As already explained, avoidance of spalling is attempted by the use of iron shims which oxidize [3597] and form a substance which binds the bricks together and prevents the fractured particles from falling or crumbling away.

After the shim has oxidized for some distance (two inches, for example) down from the hot face, the greater conductivity of metal as compared with refractory is not available at the hot face of the brick where the lining attaches. It therefore seems that the remaining metallic shim acquires its heat from the adjacent refractory bricks and what heat is transferred to the shell by metal-to-metal contact between shim and shell and lost by radiation has come from an area of the bricks substantially below the point of junction between the coating and the hot face of the bricks. This would serve to cool the bricks in general rather than the hot face in particular. The heat loss would represent a lack of efficiency in the insulation of the total basic refractory lining.

Shims are not generally used with alumina brick for many complex reasons, the simplest of which is that the monolithic bonding effect does not occur due to the chemistry of such a refractory.

Mr. Woodward, Superintendent of Southwestern Portland Cement Company at Victorville, California, had in mind that the thermal conductivity of a lining which results in radiating heat to the shell is a composite thing consisting of thermal conductivity of the brick and the conductivity of the shim which touches the shell. He testified that when his company was using the full flat shim which touched the shell, the theory was advanced by a number of people that such conductivity served a useful purpose. The hot face of the brick would be cooler and this would have a favorable influence upon the life of the [3598] lining. This theory was discussed with nearly every salesman who called upon them. He explained that there are quite a number of things that happen in the kiln that no one for sure quite understands. The theory referred to was one of the prevalent theories.

Mr. Oberg, the General Superintendent of Operations at Monolith, testified that at the time that the first Kaiser basic lining was installed at Monolith in 1947, he understood that the full shim would serve two functions; one would be to fuse the brick and the other to conduct heat to the shell to promote the formation and solidification of the eutectic elements of the clinker and thereby provide the initial requirements for building up the coating. This was a positive heat transfer function. He had an understanding that heat was being dissipated through the full shims to the shell and he discussed this with Mr. Petersen of Kaiser. The in-

creased temperature of the shell caused maintenance, lubrication and repair problems and a great deal more fuel had to be used due to heat loss, but the economics of using basic brick was demonstrated by longer lining life.

Mr. Oberg testified that it is his opinion that the shim does serve the purpose of draining heat from the hot face for the purpose indicated above. He further testified that what Mr. Petersen told him differed not a bit in any material respect from what he had heard or formed an opinion about with respect to basic refractories.

Because of the limited opportunity for direct observation, much of the existing knowledge about what occurs in an operating cement kiln has been acquired through experience of actual operation and due to the multitude of variables, it is difficult at best to pinpoint the source [3599] of trouble or improvement or establish specific causes and effects. Accordingly, it cannot be said that the evidence has wholly discredited the idea that having the shims touch the shell performs a useful purpose, but the term, "cooling the coating," is a misfit.

Radiation of heat through the shell might prolong lining life by reducing spalling, for example. One of Kaiser's salesmen reported that good results in terms of acquiring and retaining a heavy coating and long lining life were experienced by an operator who cooled the shell by water spray, thereby increasing radiation through the shell. Since clinkering occurs at a more or less fixed temperature, any lowering of lining temperature occurs between the hot face of the coating and the shell. If this serves to prolong lining life, it also

of necessity serves to increase the quantity of fuel consumed, and, therefore, the cost of fuel. So an economic balance must be struck between the cost of the lining and the cost of fuel and the amount of permissible or desirable radiation of heat through the shell depends upon what amount will result in production of clinker for the least money.

In a memorandum prepared by Lloyd Rentsch of Monolith on July 5, 1955, and referring to George C. Davis, Technical Sales Manager for Kaiser, Rentsch recites, "Mr. Davis further stated that some brick coatings were improved by radiating more heat away from the hot face than normally, and some brick coatings were improved by [3600] radiating less heat away from the hot face." It is also well established that Kaiser and Monolith and other cement manufacturers thoroughly understood that the shim transferred a substantial amount of heat to the shell of the kiln.

Despite the explanations which have been given concerning the operation of a rotary cement kiln and the function of its lining, it seems generally conceded that much of what transpires in the process is still somewhat of a mystery. Plaintiff correctly says that the reason for the industry's dissatisfaction with the conventional full flat shims was that these shims oxidized and the oxide occupied more space than the shim and thus exerted pressure and strain upon the brick in the lining, which also expanded as heat was applied.

The inventions relating to the configuration of the shim concerned themselves largely with providing a shim which would hold the lining tight under all conditions of operation without exerting more than enough pressure for this purpose. They were generally not con-

cerned with the heat transfer characteristics of the shim. On the other hand, none of those who were occupied with solving the problems of cement kiln construction employing basic brick taught that it was necessary to bring the shim into metal to metal contact with the shell. [3601]

On the contrary, it appears that they considered this immaterial, or whenever the matter of conduction of heat to the shell was recognized as worthy of note, they taught that the shim need not contact the shell in a cement kiln, as for example, Heuer '141 and Longacre '142. Longacre observed:

> "From the standpoint of reducing heat losses, it is preferable to terminate the spacer plate at 37 above the legs as shown in figures 3 and 5, thus avoiding metal to metal contact between the spacer plate and the metallic shell."

The fact that a flat metal spacer plate was inexpensive to manufacture and convenient to install undoubtedly dictated its use. As far as Kaiser was concerned, the cost and complications of manufacturing exotic brick shapes inhibited their use. It is inconceivable that the Kaiser personnel, who were engaged in refractory research and who devised and provided the formulas and prescribed the methods for refractory manufacture and tested the product, were unacquainted with its characteristics as compared with alumina refractories as described above. The Kaiser advertising and literature sent to customers indicate their complete understanding of these matters. They were also aware that an overheated kiln shell was undesirable. They correctly reasoned that the brick itself, being less insulating than alumina brick, was the major fac-

tor in the increased temperature of the shell. They assumed in approaching this problem in 1944 that the shim in contact with the metal shell would transmit the same [3602] amount of heat under all operating conditions. While this assumption may have been correct, its recitation did not invite investigation as to the extent the shim in contact with the metal shell contributed to the excessively hot shells which were being experienced. But Dr. Austin of the Kaiser Milpitas laboratory in 1951 or 1952 expressed his opinion that a full shim increased radiation to the shell. Since that time and up to 1953, there is no indication that Kaiser had tried to alter this factor in the problem of overheated shells.

THE AUGUST 27, 1953, JOHNSON-PUTNAM TELEPHONE CONVERSATION

On August 27, 1953, Alan Johnson, who was the Assistant Superintendent of the Monolith Portland Cement Company at Monolith, California, telephoned to Putnam of Kaiser. Johnson told Putnam that he had been to plaintiff's cement plant at Laramie, Wyoming, to assist in the replacement of a lining of Kaiser brick in the kiln. Putnam prepared an interoffice memorandum addressed to George C. Davis. Jr., reporting the conversation (Exhibit 106). The portion material to this discussion reads as follows:

> "The Plant Superintendent, Hank Anderson, according to Alan Johnson, is becoming concerned over the loss in production caused by the additional heat loss due to the increased thermal conductivity above a 70% alumina brick. He contends that he is losing between 100 and 200 barrels of clinker per day as a result of this heat loss. This

is the first time that we have had heat loss interpreted into terms of lost production. As a general rule it has been described in terms of increased fuel consumption. For this reason they are interested in the [3603] possibility of using an installation (sic) material behind the brick and have requested our advice.

"A second approach to alleviating this heat loss condition was suggested by them. They feel that, quite possibly, a good proportion of the heat is transmitted from the hot face to the cold face by the steel shims used. They thought that, perhaps, this could be corrected by leaving two inches between the end of the steel shim and the shell. It is conceivable that this might help, but I, for one, cannot understand how they could install their brick correctly with this gap at the back end of the brick. I can visualize all sorts of things going wrong. Any expression of how to correct or assist in the correction of this particular problem will be appreciated."

Johnson made a report dated August 23, 1953, of his assignment to Laramie to Mr. Oberg, the then General Superintendent. He reported a long conversation with Anderson regarding the Laramie kiln. He pointed out that the conditions there are much different from those at Monolith. Outside temperatures ranging down to 20° below zero in the winter months may have some effect on the kiln operation in many ways. Anderson was pleased with the increased lining life, but thought that the heat transfer through the brick may contribute to a kiln production loss of 100 barrels a day or more as compared to alumina brick. With further ref-

erence to Anderson, Johnson reported, "It is his suggestion that a Permanente (Kaiser) lining be installed leaving a two-inch space from the kiln shell which may cut down some of the radiation. It is my opinion that [3604] we should try this. It may cut down the radiant heat and should not affect the life of the lining even if it does not have the desired effect." The report was written before the phone call to Putnam of Kaiser.

While some of Kaiser's personnel and some of plaintiff's personnel subscribed to the idea that the transmission and dissipation of heat by means of the shim was beneficial to the extent heretofore indicated, neither of the parties entertained the thought that a functional lining of basic brick could not be constructed without leaving the shims in contact with the shell. This is evident from the fact that neither Johnson nor Putnam discounted Anderson's thought that the radiation of heat through the shell might be reduced by leaving a two-inch space between the cold face of the shim and the shell. Putnam's doubts, as expressed in his memorandum and to Johnson on the telephone, which were the subject of extended testimony by Johnson, centered around the proper installation of such a lining.

Johnson had used Kaiser basic brick in the kilns at Monolith for some time and was enthusiastic about their performance. Since the first basic brick lining was installed at Monolith in 1947, Mr. Oberg was of the opinion that the full shim conducted heat to the shell and that this served a useful purpose. On the same subject, Johnson testified that Palmer Ford thought that longer lining life would be promoted by the thermal conductivity of the shims. Nevertheless,

Johnson recommended to Oberg that Monolith should try installing a lining leaving a two-inch space, observing, "It may cut down the radiant heat and should not [3605] affect the life of a lining even if it does not have the desired effect." The desired effect was an increase in production.

Subsequently, in September, Anderson addressed four questions to Olive of Kaiser concerning Kaiser's recommendations for installing a lining which included full shims. He asked about the function of such shims. Olive's on-the-spot reply, as well as a more formal reply by letter from Kaiser, never suggested that the supposed heat transfer function of the shims was desirable, much less necessary.

Johnson testified at great length at the trial concerning the conversation, principally adding that he had suggested that the means of accomplishing the objective of leaving the two-inch space would be to bend two inches of the standard shim over the hot face. He also stated that he mentioned Anderson's idea of circumferential shims to be placed between the rings of brick at right angles to the axis of the kiln and that on this subject they didn't have much conversation. The Court believes that it is more likely that there was no mention of this idea because it represents a radical departure from the then current practice which could hardly be overlooked by Putnam in reporting the conversation to Davis. All elements and testimony considered, the memorandum written by Putnam concerning the conversation between Johnson and Putnam is reliable. [3606]

In the conversation Johnson is reporting the contention of Williams that the radiation of heat from

the shell as compared with the heat radiated by a shell lined with alumina brick is causing a loss of production of 100 to 200 barrels of clinker per day. The Laramie kiln production records (Exhibit 1032), which were not available to Kaiser prior to discovery, showed that the daily average production of clinker using alumina brick was 2,600 barrels in 1950 and 2,668 barrels in 1951. This, when compared with the daily average production using basic brick, which was 2,566 barrels in 1952 and 2,468 barrels in 1953, shows the basis for Anderson's estimate. Anderson had observed the excessively hot shell and contended that the difference was due to the radiation or loss of heat through the shell. He wanted to correct the condition and Johnson asked Kaiser's advice. According to Johnson's testimony, Putnam didn't have much comment regarding the matter of loss of production due to the radiation of heat, except that he didn't know how it could lose production, although it might lose B.T.U.'s.

Kaiser had long known that the use of basic brick caused undesirably hot kiln shells, and consequently, loss of heat. Putnam observed that equating heat loss in terms of lost production was a novel way of expressing the cost of the loss which theretofore had been expressed in terms of increased fuel consumption. This was a foreceful expression which was probably more appealing than equating this undesirable condition with the cost of some extra fuel. The expression itself is not a trade secret. Whether the restriction of heat loss would account for the difference [3607] in the production rates experienced was unknown to Anderson at the time. That it would, was simply a contention without demonstration of any kind.

Johnson suggested two possible solutions to the problem, one providing insulation material between the cold face of the basic brick and the shell, and the other leaving a two-inch space between the cold edge of the shim and the shell. Both of these suggestions emanated from Anderson at Laramie. Johnson wanted Kaiser's advice on the suggestions and any expression of how to correct or assist in the correction of alleviating the heat loss. The telephone call contained both a speculation as to the effect of the heat loss and a question as to how it might be avoided. Plaintiff characterizes this as a confidential disclosure of a trade secret or of valuable information possessed by the plaintiff.

DISCLOSURES MADE BY JOHNSON TO PUTNAM ON AUGUST 27, 1953.

Plaintiff contends that at least the following concepts were disclosed to Kaiser by this call:

> "(1) That Anderson believed that *shortshimming would work* in the high temperature burning zone of a rotary kiln; and
>
> "(2) That radiation caused by the conventional full shims, necessarily used with basic brick, directly affected the production of the kiln (rather than merely increasing fuel consumption) and was to be avoided."

It must be observed that both points are actually Anderson's belief because so far as plaintiff and Anderson were concerned, both lacked demonstration. [3608]

The disclosure that it was Anderson's belief that such a lining would work rises no higher than the disclosures of Heuer '141 and Longacre '142, which patents disclosed to Kaiser that the inventors believed that

such a lining would work. In fact, both of the patents mentioned rose to a higher degree of disclosure. Heuer '141 makes the following disclosure:

> "More recently success was had in employing nonacid refractory brick, particularly magnesite (magnesia) brick, in the burning zone. This zone was then insulated by inserting between the nonacid refractory brick lining and the kiln shell, a separate course of insulating bricks of perhaps 1 inch to 2½ inches in thickness.
>
> "This arrangement of an inner refractory lining and a separate heat insulating brick layer has caused difficulty through short life of the lining. Study of the problem by the present inventor indicates that a major factor in such reduced lining life is slight lateral shift between the inner annulus or layer of refractory brick and the outwardly adjoining annulus or layer of heat insulating brick. In many cases the heat insulating brick do not conform exactly to the dimensions of the outer surfaces of the refractory brick, even when the lining is originally installed, so that an individual refractory brick may be backed up in part by one insulating brick and in part by another, or even conceivably in part by four different insulating bricks." [3609]

There follows a further explanation and analysis of the cause of the short life experienced. Those skilled in the art would recognize that shims between the nonacid or basic brick would be employed in the usual manner and that if the "separate course of insulating bricks does not conform exactly to the dimensions of the outer surfaces of the refractory brick . . . so that an individual

refractory brick may be backed up in part . . . by four different insulating bricks," the shims obviously would not go to the shell and the result would be a short-shimmed lining.

Longacre '142 discloses:

> "Nonacid brick such as magnesite brick have been recently installed in rotary kilns, thus raising the permissible operating temperature at the hot face. With such magnesite brick in the refractory lining, the burning zone has been insulated by inserting, between the lining and the shell of the kiln, an annular course of insulating brick ranging from one inch to two and a half inches in thickness, and suitably consisting of asbestos or the like.
>
> "Such insulating linings were quick to fail, apparently due to the shifting of the relative positions of refractory bricks in the lining with respect to individual bricks in the heat insulating layer. With each rotation of the kiln, an individual brick in the lining passes through a condition of no load, to a condition of maximum load under which it is bearing the load of the [3610] charge and the lining. Relative shifting of the refractory lining and heat insulating layer has produced unevenness in the base of support for the cold face of the brick in the refractory lining. Thus at one time the individual brick in the refractory lining may be supported fully and evenly on an individual heat insulating brick, whereas at another time the cold face of the refractory brick may be opposite a junction of two or of four heat insulating bricks, with almost inevitable uneven support."

This is followed by further explanation and analysis of failure. Those skilled in the art would recognize such a lining as a short-shimmed lining.

By the time of these inventions, the advantages and use of metal plates or shims between the brick in basic brick installations was so universally known and practiced that those skilled in the art would accept as of course the use of such plates in any application of basic brick in a cement kiln. That such insulated linings were cement kiln linings is apparent, particularly from the patent's previous discussion of the problem of unsuccessful attempts to insulate alumina linings in which cases it was observed that "the insulation increased the temperature of the working face of such brick beyond the point which the brick could stand when in contact with lime and other fluxes present in the charge," thus identifying the materials used to make cement. The same language appears in both patents. Heuer and Longacre taught that short shims were desirable to prevent loss of heat as noted earlier in this memorandum and that a lining so constructed would work and had worked. [3611]

An evaluation of these disclosures leaves open to question only the experience, powers of observation and veracity of the inventors.

The second point which the plaintiff claims was disclosed to Kaiser in the Johnson-Putnam conversation is Anderson's speculation that the heat loss directly affected production of the kiln and was to be avoided. That heat loss was to be avoided was already known to Kaiser and whether the production would be affected beyond influencing the amount of fuel required was at that time probably not even the subject of speculation.

The claim was later made by plaintiff that an increase in production out of proportion to the amount of heat consumed by short shims was experienced and that this was an entirely unexpected result.

The Johnson-Putnam conversation postulated a suggestion, "that, quite possibly, a good proportion of the heat is transmitted from the hot face to the cold face by the steel shims used" and, "that, perhaps, this could be corrected by leaving two inches between the end of the shim and the shell." The plaintiff would have the Court construe this as a disclosure that a good portion of the heat radiated by the shell is transferred to the shell by the shim. As already pointed out, this fact was well known and recognized by Kaiser, the plaintiff and others in the industry. Anderson's opinion that by providing the two-inch space the heat loss could be avoided is all that is left. Since the metal to metal contact of shim and shell was known to serve the function of transmitting or dissipating heat, it is obvious that the absence of such contact would inhibit the transfer of that heat. [3612]

As early as February 14, 1944, Kaiser had been asked, assuming that the heat transmitted by the shims is constant under all operating conditions, what can be done to reduce shell temperature. The answer was to reduce the area of contact between the brick and the shell. In effect, this time Johnson posed the question conversely. Assuming that the heat transmitted by the brick is constant under all operating conditions and that a substantial amount of the heat of the shell is transmitted by the shims, what can be done to reduce the shell temperature? The answer comes readily to mind. Reduce the amount of contact between the shim and the shell. In both instances the feasibility of the an-

swer depends upon finding an acceptably workable means for accomplishing the result.

Putnam questioned the feasibility of a two-inch space being left and could imagine all kinds of problems and not without obvious reason. In installation, the space could result in cocking the bricks so that their side faces between which the shim is placed would not be radially oriented, compounding a common problem in any installation, or cause them to creep or step since there would be an absence of shim to line them up. Putnam, according to Johnson, said that he was not concerned with how the shims were held up, he was concerned with how to lay them. Furthermore, as the bricks wore thin, the presence of the oxidizable metal to form the monolithic bond would be absent and earlier failure might be anticipated. Even if Johnson suggested to Putnam a means of accomplishing the objective, [3613] this was not passed on by Putnam to Davis, Nevertheless, the same means of spacing the shim during installation readily occurred to Davis, who suggested bending a part of the standard shim over the hot face. When the same objective occurred to others, both before and after the Putnam-Johnson conversation, the same means of shortening the shim quickly suggested itself.

Plaintiff concedes, in fact argues, and the Court agrees, that this is a simple expedient which would be an obvious mechanical solution. The fact that more heat is transferred by a metal to metal contact than when a space separates one piece of metal from another is conceded to be well known.

In processing the Anderson patent in suit, plaintiff made the following representation to the examiner:

> "No prior patent is needed to tell a person of ordinary skill in the art that shims spaced from the shell of a kiln will transfer less heat to the shell than shims disposed in direct contact with the shell. This is an elementary principle of physics."

It must be recognized that in any invention or in any new concept involving physical laws, a sufficient subdivision of the steps constituting the rationale reduces it to easily recognizable steps which lead obviously to the ultimate conclusion. On the other hand, recognition of the total conception may not have been obvious in the first place. It may constitute invention and even if not invention, its employment by a manufacturer or processor may constitute a trade secret. [3614]

Two weeks after the Johnson-Putnam telephone call, Davis replied to Putnam's memorandum by interoffice memorandum of September 10, 1953, containing, among other things, the following:

> "With regard to the heat loss problem, this same question was recently raised in a different way by Cebu Portland Cement and we were forced to tell them that we would not recommend insulation. From what I can pick up here and there, the only solution is to get a darn good coating on the lining and keep it during its entire life.
>
> "The idea of using a space between the cold end of the steel plate and the shell has been raised before. I believe this might be accomplished fairly simply by bending over a one or two-inch tab on our regular plate for this job. If they would like to try it, we would furnish these special plates at no extra charge, for the experiment."

The first paragraph quoted above relates to insulation behind the brick. Some reasons for not recommending it have already been mentioned. The second paragraph relates to a different subject, the idea of spacing the shims from the shell and indicates that the idea was not new to Davis of Kaiser. [3615]

Longacre's invention concerned a basic brick with legs. Heuer's invention was a basic brick backed up by an attached insulating portion. Both inventors recommended a short shim to reduce heat losses. Both recited that there had been successful earlier use of basic brick installed over a layer of insulating brick. In none of these installations did the shims touch the shell. The fact that Anderson's belief coincided with Longacre and Heuer's added nothing to Kaiser's knowledge of the art of kiln construction and did not constitute information of value to Kaiser.

That loss of heat through radiation affected production in any way other than to increase fuel consumption was not known to either party. As will subsequently appear, plaintiff contends that it discovered, quite unexpectedly, when employing short radial shims, that they dramatically increased daily production out of all proportion to the conservation of heat and fuel. Whether the short shims caused a production increase is an issue. The inconsistency between experiencing unexpected results which were assertedly forecast by Anderson cannot escape observation.

The question is whether in the light of the knowledge already possessed by Kaiser, did the telephone con-

versation constitute a disclosure to Kaiser of either a trade secret of plaintiff or of valuable information possessed by plaintiff which was unknown to Kaiser at that time. The Court's conclusion is that it did not. By raising the question as to whether an installation with shims two inches short would be worth the trouble, [3616] Johnson did not communicate a trade secret. At most he stimulated inquiry into the matter.

Kaiser pursued the inquiry on its own and ultimately produced the Unitab. The short shim used by Kaiser solved the problems of installation by running the shim close to the shell leaving a space varying from three-eighths of an inch to three-quarters of an inch. Such a shim obviated the problems of installation and furnished sufficient metal to supply the monolithic welding together of the brick until the lining would become so thin that it failed for other reasons. Whether other information was obtained from plaintiff which enabled Kaiser to develop the Unitab will be discussed. But what Johnson told Putnam did not supply the information which Kaiser did not yet have, whether a short-shimmed installation would be worth the trouble. If the answer should come to Kaiser or someone other than plaintiff, Kaiser could not be accused of having appropriated a trade secret or valuable information belonging to plaintiff. Plaintiff had no exclusive legally protectible interest in the pursuit of an answer to a question of common interest.

There is an independent reason why plaintiff's claim with respect to the August 27, 1953, Johnson-Putnam telephone conversation cannot be sustained. The telephone conversation was not confidential. [3617]

THE JOHNSON-PUTNAM CONVERSATION WAS NOT CONFIDENTIAL

Plaintiff contends that a confidential relationship existed between plaintiff and Kaiser by reason of the relationship between Kaiser as the supplier of refractories and plaintiff as the user. A great deal of evidence was adduced on this subject which is, in final analysis, only inferentially contradictory. It is well established by the overwhelming weight of the evidence that Kaiser had a policy of free exchange of information which could lead to the improvement of rotary cement kiln linings and plaintiff was well acquainted with this policy and took advantage of it.

When Monolith first started to use Kaiser products, there were no written instructions available concerning the proper method of constructing a lining. Monolith had such instructions prepared for its own use and gave a copy to Kaiser, knowing that they would be used by Kaiser salesmen to promote the sale of Kaiser brick. These instructions were the product of Monolith's experience in the use of Kaiser's basic refractories. This was done in 1947 or shortly thereafter. These instructions were revised from time to time by Kaiser and published in booklet form to be freely given to any cement manufacturer desiring to use Kaiser's products.

Monolith's expectation was that the information it gave to Kaiser would result in an improvement of the product which would redound to the benefit of Monolith and, incidentally, benefit other users. Monolith had no secrets as far as the use and installation of Kaiser basic brick so far as Kaiser was concerned and everything that [3618] Monolith learned about it was given

to Kaiser. Monolith people thought that keeping Kaiser as well informed as they could would serve Monolith's purpose well. Monolith didn't expect that Kaiser would make one refractory for Monolith and another for someone else. There was never a time when Monolith told Kaiser that Kaiser was not free to use such information by incorporating it into their refractories sold to other people.

Monolith and plaintiff made their records of kiln lining construction and life available to Kaiser. On the other hand, production records were never made available and Kaiser was not expected to pass on specific information as to the construction and life of kiln linings identifying Monolith by name. There was no evidence that this was done. Kaiser advertised that "one of our customers," without naming the customer, had a specified experience with Kaiser's products, without objection from anyone so far as the record shows. Monolith and plaintiff's personnel discussed their problems and ideas with Kaiser and sought Kaiser's advice which they knew would represent a composite of information obtained from other customers and evaluated by Kaiser. Kaiser was a clearing house for information concerning refractory use which information was obtained in large part from its customers.

Any time that information was characterized as confidential, Kaiser kept the confidence. Kaiser also exercised a discreet judgment, as did other refractory manufacturers, as to the difference between general information which could be made available to the industry and special information affecting the competitive advantage of a particular customer over its business rivals. [3619]

An elaborate effort was made to demonstrate that plaintiff and Monolith and other cement manufacturers took security measures to keep their secrets. These consisted of requiring visitors to obtain permission to enter the premises, sometimes to obtain a pass or to wear a badge or a hard hat which might be of a special color which would identify them as visitors. They were usually escorted. Most of these measures were as much designed to prevent accidents as to provide security. Visitors from rival cement plants were sometimes admitted and were shown what they requested to see. Of course, they exercised restraint, not requesting to see production records or financial information. Kaiser salesmen were frequent and familiar visitors who knew their way around and were accorded greater freedom of access. However, they did not have free access to records which went beyond information which could be reasonably related to aiding them in the production of better refractories or to furnishing suggestions concerning their most economical use.

There was nothing about the August 27, 1953, telephone call which expressly or impliedly indicated that the conversation was to be considered confidential or that Kaiser was not expected to consult its reservoir of knowledge or sources of information with respect to the subject or for that matter not come up with a suitably improved refractory, not just for Monolith, but for every customer. With respect to the problem of radiation from the shell, Putnam reported to Davis, "Any expression of how to correct or assist in the correction of this problem will be appreciated." [3620]

Indicative of the relationship between the parties at about this time, in fact, after the conversation on Sep-

tember 14, 1953, is the fact that Anderson asked Kaiser's representative, Olive, four specific questions. These were passed on to the Kaiser sales office and were answered by Putnam in a letter dated November 19, 1953, addressed to Anderson. The introductory paragraph, apologizing for a delay in response, read in part, "It was our desire that our response be, not only our opinion, but the opinion of other operators throughout the country." Some doubt exists as to whether this letter reached Anderson promptly. In any event he had a copy shortly after January 12, 1954. No exception was taken to such a procedure on any ground.

Finally, the intent of the parties is material to the issue. This is reflected in Johnson's testimony, as follows:

> "Q. When you commenced your conversation with Mr. Putnam in August of 1953, did you say that what you were telling him was to be confidential?
>
> A. No.
>
> Q. Did you assume that it was?
>
> A. Did I assume that it was confidential?
>
> Q. Yes.
>
> A. No."

Plaintiff makes one further contention that this telephone conversation was confidential, relying upon a letter from Kaiser written at a much later time. Taken in its proper context, the letter did not refer to the telephone conversation, as will be pointed out later. [3621]

THE RADIAL SHIM DEVELOPMENT AT LARAMIE

On September 14, 1953, Olive of Kaiser went to Laramie and stayed two days, during which time he talked to Anderson. Olive reported the visit to Kaiser. He listed four questions asked by Anderson, which have previously been mentioned, among them, why Kaiser doesn't use steel shims between the rings rather than in the ring. He included two sketches of what is variously referred to as a circumferential, radial, circular, transverse, arcuate or segmental shim. It is sometimes said that the conventional placement of shims between the brick in the ring is a radial placement of such shims, but the shims are referred to as longitudinal shims because they are parallel to the axis of the kiln. They are never referred to as radial shims. Radial shims are positioned at right angles to the axis of the kiln. All of these expressions refer to a steel plate shim shaped to fit the curved cross-section of the kiln and wide enough to extend from the hot face of the brick to the shell or a part of this distance. He sketched such a shim thirty inches long and added that Anderson was going to put the next lining in with such shims, "unless we can give him some very good reasons why he shouldn't." There was no reference to spacing such a shim out of contact with the steel shell, nor is such a space evident from his sketches. It was this report which elicited the letter of November 19, 1953, from Putnam of Kaiser to Anderson, answering the four questions after consulting others.

Oberg testified that he discussed a proposed lining for the Laramie kiln with Ford of Kaiser sometime [3622] after September 18, 1953. He said that he de-

scribed a segmental shim which would be spaced from the shell an inch and a half to two inches, and that he told Ford that Monolith wanted to get Ford and Kaiser's opinion as to the feasibility of such an installation and that Ford said that he found it quite interesting.

Oberg said that he had several other discussions with Ford prior to the installation of the proposed lining and mentioned having Kaiser furnish circumferential shims. There is no confirmation of such conferences by Ford by way of a report, or otherwise. In November, 1953, the Kaiser production people produced a sketch and cost estimate of a shim similar to the sketch Olive had included with his September 15th report, but modified for economy of production and designed to rest on the shell.

Late in 1953 and during 1954, Ford of Kaiser had several conversations with plaintiff's Anderson. All of these conversations concerned Anderson's conception of the radial shim which was to be placed between the rings of brick. The parties to these discussions did not consider or treat these conversations as confidential. Anderson testified that he didn't recall discussing any processes or devices or structures or operating procedures of the cement kiln which could be considered trade secrets which he would not reveal to the general public. Ford testified that no one at Monolith ever told him that spacing was a Monolith idea or that any trade secret [3623] was being disclosed to him.

On January 15, 1954, Ford called on Oberg at Monolith and made a report of the call, saying that Oberg asked again about Kaiser's recommendations re-

garding the 30″ x 7½″ special steel shims fabricated by Laramie. Oberg told him that Laramie had purchased $900.00 worth of such shims and would use them if Kaiser would go along with the experiment. But by letter dated January 14, 1954, Oberg had already instructed Laramie to install the radial shims so as to space them from the shell. Oberg testified that no meaningful advice was ever received from Kaiser on the subject of using the radial shims.

THE JANUARY 1954 LINING AT LARAMIE

On January 16, 1954, a twenty-two foot section of the burning zone of the Laramie kiln was lined, using the radial shims. The kiln was fired up on January 24, 1954. No Kaiser personnel were present during the installation or start up of the kiln. In a March 3, 1954, call report, Ford reported to Kaiser that Johnson said that "the short steel shim installation" at Laramie appears to have increased clinker production 100 barrels per day. Johnson testified that it was his [3624] opinion that it was too early to tell whether there had been any increase in production, but that everybody concerned was so optimistic that he passed on the optimistic opinion anyway. According to the testimony of Oberg and Johnson, both of them talked to Ford about the Laramie lining. Johnson pointed out that Oberg was quite worried about the durability because it was an experimental lining which Oberg approved and it would have to last a number of months to justify the expense. On April 30, 1954, plaintiff's plant engineer advised Olive of Kaiser by letter that a substitution of circumferential shims for the standard Kaiser shim was desired.

On May 4, 1954, Olive called at Laramie and made a report to Kaiser, stating that he had been requested to get a quotation on circumferential shims to be 7" wide "so that they will be sure they do not touch the shell." He also reported that the January Laramie installation was "put in using steel shims on all 4 sides of the brick." The requested quotation was furnished by letter dated May 19, 1954, and this resulted in a purchase order being issued to Kaiser and the shims were shipped July 26, 1954. [3625]

On May 28, 1954, Kaiser Sales Engineer R. L. Petersen, commenting on Olive's May 4, 1954, call report, asked Davis why Laramie wanted to be sure that the shims would not touch the shell. Davis replied on June 2, 1954, saying that he was sure that the reason was that so much steel in the lining (referring to steel on all four sides of the brick) would cause the shell to overheat if there were direct contact between the shims and the shell and said to Petersen, "Let's have your reasons why they shouldn't touch the shell."

Petersen replied to Davis on June 14, 1954, as though he had been requested to state his reasons why they should touch the shell, which was probably the question Davis intended to ask. Meanwhile, Petersen reported on June 7, 1954, that Jim Andrews of Ideal Cement Company was seriously considering installing a lining with the shims kept one-half inch or more away from the shell by use of shims supported from the shell by a narrow leg on each end of the shim. He voiced his opinion that this would shorten lining life. His June 14, 1954, reply to Davis' question explained his reasons, pointing out that experiences of certain customers indicated that a heavier coating is obtained and

carried where more steel is installed. He cited installations where the hot zone portion of the shell is water cooled, resulting, in his opinion, in a very thick coating and long lining life. He concluded by asking if Ideal should be allowed to install the short shim lining.

By memo dated June 25, 1954, Davis continued the dialogue by letter to Petersen in part as follows: [3626]

> "Pete, I'm not at all inclined to disbelieve your ideas on the subject. As I have pointed out in previous conversations and memos, we all agree, I think, that there is a connection between increased steel and longer life in certain spots. Certainly this has been proven over tires, if nowhere else. Whether this increase in steel contributes to longer life by creating a more rigid section at a point in the kiln that is subject to flexing, whether the increased life is due to getting and holding a coating better because of (a) cooling of the hot face, (b) better inducement due to the presence of more iron on the hot face, are questions which I don't think we are as yet prepared to answer.
>
> "I do feel that working together and comparing notes from actual field experiences, we are going to get the answer. As for example at Laramie, they have one lining using steel on all four sides which is giving better service than ever before. At the termination of this run and the termination of the run wherein they will install just as many plates, but the plates will not touch the shell, we may be able to draw some conclusions with regard to questions (a) and (b) of the second supposition.

> "While this period of trial and error is going on, we should also keep in mind that we have every reason to believe that excessive steel can cause [3627] bloating of the hot face due to the reaction in the chromite and that at some point this could affect the life of the lining."

Bloating of the hot face due to the reaction in the chromite is another way of expressing the teachings of some of the earlier patents, such as Geistler '498 that an excess of steel, caused to oxidize and expand to a volume greater than the original steel plates, may subject the adjacent refractory to severe stress resulting in fracturing of the refractory and spalling. By this communication, Davis is not evidencing an adherence to Petersen's brief in behalf of full shims to the shell. On the contrary, he is courteously cautioning Petersen that much remains to be learned about cement kiln lining construction. He is recommending that Petersen keep an open mind and that only field experience will furnish the information from which valid conclusions can be drawn.

On July 16, 1954, Ford sent Putnam the following teletype:

> "Hank Anderson of Monolith Midwest states that the recent Laramie brick installation has proven very successful. The 7½" x 30" steel shims were installed between the rings. No shims or spacers were used circumferentially in this installation. He suggests we call Dunk Williams for the complete story if we are interested."

(Olive had reported to Putnam that steel on all four sides of the brick had been installed.) In context, the

term "circumferentially" means shims between the brick in the ring. [3628]

On September 13, 1954, Olive reported a call at Laramie indicating that the installation had only short circumferential shims. On November 22, 1954, Ford reported a call on Monolith in which he said that Monolith considered the Laramie installation so successful that they would try it on the next small kiln to require lining. Monolith operations were reported to be under the impression that the circumferential shim was more sound mechanically and resulted in heat savings because of the space between the shim and the shell.

By interoffice memorandum dated November 30, 1954, one Kaiser office asked another to advise the cost for Kaiser to produce the radial shim for Laramie in accordance with a new sketch, as well as the way they previously sent the radial shim to Laramie and also the cost of an "L" plate to fit one end and one side of the brick, but one and one-half inches short of the shell. This latter request was probably anticipating the possibility of Laramie wishing to have steel on all four sides of the brick which would be the result of such an "L" plate. This is a continuation of the uncertainty as to just what was installed at Laramie and an effort by Kaiser to develop a refractory product to suit its customer's needs, the result of exchange of information with this purpose in mind. This use of the term "L" plate is to be distinguished from its later reference to a standard or short shim with a part bent over the hot face.

The Laramie kiln with the January, 1954, radial shims went down for relining in December of 1954, after ten months and twenty days of service. [3629]

On March 7, 1955, Ford called at Monolith, California, and made a report to Kaiser reading in part as follows:

> "Management has decided to completely discard the conventional method of lining installation in favor of the radial shim practice for the following reasons:
>
> "1. Elimination of horizontal lining cracks by alternating the radial shims between rings.
>
> "2. More structural stability and resultant reduction of ovality of the shell because of the stiffening effect of the circumferential bond.
>
> "3. Substantial reduction of radiation heat loss to the shell by providing insulation space between the cold face of the shim and the shell."

On April 21, 1955, Ford called on Monolith and reported that the lining in No. 4 kiln was installed with the use of circular shims. The job took a little longer than the conventional manner because of creeping of the bricks. The next significant series of events in the relationship between plaintiff and Kaiser commenced June 9, 1955, at which time the parties met to discuss licensing Kaiser to practice the invention of Anderson which was the subject of a pending patent application. A review of the developments to that date will help to focus upon the significance of the license negotiations. Of importance is Kaiser's concept of the January, 1954, lining at Laramie, how the lining actually was installed, and what information pertinent to short shim linings Kaiser had received from sources other than the plaintiff. [3630]

KAISER'S INFORMATION CONCERNING THE JANUARY, 1954, LINING INSTALLATION AT LARAMIE

The January, 1954, Laramie hot zone lining which is the subject of all of this discussion was composed of ten feet of Kaiser brick installed in the conventional way with full shims. This section had been in the kiln since September, 1953, and was located in the burning zone where the flame was hottest. Twenty-two feet of the hot zone was installed in January, 1954, using the radial shims and a part of the hot zone was lined with alumina brick with no shims. Some of the twenty-two feet which used radial shims had steel on all four sides of the brick. What portion is impossible to determine from the evidence.

While Ford's March 3, 1954, call report relayed Johnson's reference to the short shim installation at Laramie, Olive's May 4, 1954, call report indicated that in the entire lining installed in January, 1954, each brick had steel on all four sides. Olive's report was generally credited as accurate since he had received the information at Laramie, while Ford's reference was from Johnson at Monolith, California. While Olive's report does not indicate that the radial shims were spaced, Davis of Kaiser, who received the information contributed by the various salesmen, thought that they were as indicated by his June 2, 1954, letter to R. L. Petersen. Davis also thought that the conventional shims were used in the ring to result in steel on all four sides as indicated by the same letter. If Johnson's reference to short shim installation referred only to radial shims, then both reports were credible and consistent with what Davis had in mind. On July 16,

1954, Ford advised Putnam that only short radial shims had been used. [3631] The impression of the Kaiser organization that the lining was constructed with steel on all four sides of the brick was not dispelled until Olive's September 13, 1954, call report indicated that only short circumferential shims had been used. This information received confirmation from Ford in his November 22, 1954, call report on Monolith.

The evidence on the subject of how the January, 1954, lining was installed leaves much to be desired, but in its entirety, it indicates that the major portion of the twenty-two foot section installed at that time was installed with radial shims held away from the shell by means of cutting the shim and bending over a tab or of washers or short pieces of metal rod welded to the hot edge of the shim. No means for holding them from the shell was suggested by Oberg. This was a matter apparently left to the ingenuity of the mechanics at Laramie.

From the time of the Johnson-Putnam telephone call to September 13 or November 22 of 1954, whatever information Kaiser had received concerning the Laramie installation was meaningless. The misconception of Kaiser as to the nature of the lining prevented any correlation of such information in terms of a short shim lining. Until the true character of the lining was brought to Kaiser's attention, it was Kaiser's understanding, as indicated by Davis' memorandum of June 25, 1954, to Petersen, that when the January, 1954, lining at Laramie required replacement, only then would a

lining be installed with places which would not touch the shell and that it had not yet been done. [3632]

After September or November of 1954, Kaiser could intelligently consider whatever information it had received concerning the January, 1954, Laramie lining. A review of all of the information received from the time of the Johnson-Putnam telephone call to June of 1955 reveals that all of such information relates exclusively to radial shims.

Kaiser had been told by this time that the Laramie installation had been successful, that it had a relatively long life and that a production increase of one hundred barrels of clinker per day had been experienced. Monolith's evaluation of the benefits was reported as:

1. Eliminating horizontal lining cracks;

2. More structural stability resulting in reduction of ovality of the shell by furnishing a circumferential bond; and

3. Substantial reduction of radiation heat loss to the shell.

Only one of these benefits would necessarily be common to any short shim, the reduction of radiation of heat through the shell. This result, however, may be peculiarly related to the radial shims for the obvious reason that a radial shim installation uses only about half as much metal as conventional shims employ. The relationship of the amount of metal in the installation and radiation through the shell was recognized by Davis in his reply to Petersen, explaining why Monolith want-

ed the radial shims short of the shell at a time he thought that conventional shims were also used. The effect of a short shim in the ring was not established by the Laramie lining. [3633]

The increased production effect required a great deal more information before it could be evaluated. It will be remembered that Oberg considered that he had assumed a great responsibility in authorizing this lining and it might be expected that consequently he and everyone under him were very anxious for it to be a success and no doubt tended the kiln with great care. It will also be remembered that a difference in average daily production over a year's time of sixty-eight barrels of clinker per day had been experienced before in the same kiln when it was using alumina brick. In 1950 the average daily production was 2,600 compared with 2,668 in 1951. To arrive at such an average over a year's time, some of the daily production differences and the production differences over the life of particular linings must have been much greater than sixty-eight. The reasons why the improved production was considered to be beyond a normal fluctuation remained to be explained before it could be reliably concluded that the increase was due to the construction of the lining. That many trials must be conducted before an observed effect can be attributable to particular cause or causes is well established in the record.

All of the other advantages thought to flow from the concept employed in the Laramie lining are peculiar to the radial posture of the shims used as compared to the longitudinal alignment of the conventional shim in the ring.

SHORT SHIM INFORMATION FROM THIRD PARTIES AND THE DEVELOPMENT OF THE KAISER UNITAB

Between the time of the Johnson-Putnam telephone conversation and September or November of 1954, and thereafter to June of 1955, other customers of Kaiser had raised the question of leaving a space between the cold edge of the [3634] shim and the shell with Kaiser salesmen who reported these suggestions to the home office. On June 2, 1954, Mr. Sauer of Riverside Cement Company discussed heat loss through the shell with Ford. He likened the shims to fins on a radiator and suggested a legged shim which would space all but an insignificant part of the shim from the shell. According to Ford's report:

> "Sauer suggests that we spray our brick with a combustible mastic material to the required thickness to compensate for thermal expansion. He further suggested that steel shims be made with the cold face notched to reduce heat transfer to the kiln shell."

Davis penned a note at the foot of the report, reading in part:

> "(2) We will supply plates bent over on one end if they wish—slight charge. Steel on the hot face may assist quicker coating—will do no harm."

On June 18, 1954, Davis told Ford to tell Sauer that such a plate would be furnished upon request to accommodate two practical purposes: First, it would not reach the shell, and second, the iron on the hot face would aid in inducing a coating. On July 6, 1954, Ford so advised Sauer and reported that the customer

was very interested in the use of bent-over plates to reduce thermal conductivity to the shell. This was prior to the time that Kaiser knew that the Laramie lining was short-shimmed. [3635]

Sauer tried out the idea by having about 1,000 shims bent so that one and a half inches overlapped the hot face resulting in a similar space between the cold edge of the shim and the shell. They were then installed in a kiln at the Riverside-Oro Grande plant. He found that this much space cocked the brick and the rings could not be keyed tightly, and decided upon a three-quarter inch space. This was before February, 1955, perhaps as much as six months before. On February 1, 1955, Sauer changed an order pending with Kaiser to provide a brick to which a shim bent over on the hot face and short from the shell would be attached. The result was a brick-shim unit. The order was shipped on March 2, 1955, and installed as needed commencing on May 18, 1955. All of this was before June of 1955 when the next step in the plaintiff-Kaiser relationship was taken. Further sales and installations were made in 1955.

On June 7, 1954, Petersen of Kaiser reported that Jim Andrews of Ideal Cement Company at Denver, Colorado was seriously considering installing a hot zone lining using a legged or notched shim to space it away from the shell at least one-half inch or more. This was before Kaiser knew that the Laramie installation was short-shimmed.

On February 15, 1955, Ford called on International Minerals & Chemical Corp. at Carlsbad, New Mexico. His report to Kaiser contained considerable information regarding heat loss through the shims and improvement

of the thermal efficiency by reducing heat loss through the shims. He also reported that Harbison-Walker had supplied to Canadian Refractories a short shim bent over the hot face, and that substantial savings had been realized in thermal [3636] efficiency. This was after Kaiser knew that the Laramie lining had short radial shims, but before June of 1955.

On March 15, 1955, Ford called on Southwestern Portland Cement Company at Victorville, California, and discussed thermal heat loss and the order received by Kaiser from Riverside Cement Company for the short-shimmed brick unit. He discussed the latest products being offered by General Refractories. This product is a unit of short shim and brick without any part of the shim on the hot face. He expressed the opinion that Southwestern's next order would go to General Refractories unless Kaiser could offer the same deal as supplied to Riverside. Southwestern ordered the Kaiser back-shim unit on April 4, 1955, and installed a lining of this product on May 4, 1955. All of this was before June of 1955. Kaiser made further sales of the same product which were installed all during 1955.

Ford reported a call on Riverside Cement Company's Oro Grando plant on April 27, 1955, stating that the salesman for General Refractories said that his company was prepared to supply metal encased brick with the insulating space such as Kaiser's or would metal encase them any way the customer wanted. On the same day he called on Southwestern Cement Company at Victorville, where the same General Refractories salesman repeated the statement he made at the Oro Grande plant.

DEVELOPMENT OF KAISER'S BRICK-SHIM UNIT

The Kaiser unitized brick-shim combination which was sold to Riverside appears to have begun to take shape before September 24, 1954, when R. T. Drennan of the Kaiser organization at Oakland addressed a memorandum to ther Kaiser personnel, including Petersen and Putnam. The first and last paragraphs are quoted: [3637]

> "From time to time the suggestion has been put out by a few that we could probably enhance the value of our cement kiln liners by gluing on the cardboard spacer so as to cut down slightly on the installation time and at the same time eliminate once and for all the age old problem of bricklayers putting the block in upside down.
>
> ". . .
>
> "I would like each of you to give me expressions from your group whether or not the gluing the cardboard alone on the brick, or gluing the metal alone on the brick, and leaving the cardboard loose as we are doing now, or gluing both items on the brick would result in more sales. Also, whether we could expect to regain any of this extra labor charge from the customer. In other words, we feel out here that if we did glue these articles onto the brick, it certainly would be a big time saver for the customer in lining up his kiln; but whether or not it would be of sufficient interest to him that he would absorb the cost or part of it, we do not know. Would appreciate your thoughts."

A further step was taken on November 29, 1954, with a memorandum from Davis regarding such a unit

to save the customer money in installation. He suggested bending part of the shim over the hot face for identification of the hot face and to furnish iron to induce a coating. On December 14, 1954, Putnam added a note urging bending the shim over the hot face and shorting it from the shell, and added that [3638] he was "getting quite convinced about this conduction of temperature by the steel. . . ."

Putnam had observed that the superintendents of both the Riverside Cement Company in California and the Ideal Cement Company of Colorado had suggested legged shims to space the metal shim from the shell. He had suggested to Riverside Cement Company that the standard plate be bent over the hot face to accomplish the purpose, the same suggestion that Davis had made to the plaintiff. It is not at all apparent that he was becoming convinced because of the Laramie lining which employed the radial shims as argued by the plaintiff. The appearance of a market for a brick short shim unit would alone be enough to convince a refractory salesman that the product should be made available. Kaiser had received information concerning the installation and use of radial shims between rings from plaintiff and Monolith. However, information concerning short shims disposed in the ring as shims had been conventionally used in the past came from the patent art, other customers, other products on the market and in the course of development of its own refractory products.

Before the licensing negotiations between the parties in June, 1955, Kaiser had applied a well known elementary principle of physics, employed in an obvious mechanical manner, resulting in a short shim which it

glued to its own refractory articles to form a short shim unit which it sold to customers. Neither the basic knowledge nor the mechanical skill of plaintiff was [3639] involved. Kaiser was impelled to manufacture such an article by the demands of its customers, other than plaintiff, and to meet its competition.

No element or possible combination of elements of this unitary kiln block was derived from information not previously known to Kaiser or acquired from sources other than the plaintiff.

PRODUCTION RESULTS OF THE JANUARY, 1954, LARAMIE LINING

Plaintiff places great emphasis upon its claim that the radial short shim used in the January, 1954, Laramie lining resulted in a dramatic increase in daily production and longer lining life. Review of the record on this subject is very important.

Production figures are expressed in terms of an average daily rate of production over the period of one month. Instead of an increase in production after the installation of the January, 1954, lining, production immediately suffered a 25-barrel drop as reflected by the February, 1954, figures. During March it recovered to the previous level. In April a 200-barrel per day drop in production was experienced. Unquestionably, the March 3, 1954, report by Johnson of Monolith to Ford of Kaiser that this lining appeared to have increased production by 100 barrels per day was completely false.

Sometime early in 1954, a new Hummer screen was installed. The wet slurry which is to be introduced into the wet or feed end of the kiln which will travel [3640]

through the kiln and eventually become cement clinker, passes through the Hummer screen which prevents particles over a certain size from entering the kiln. The object is to provide more uniformity in the size of the particles in the slurry to promote the efficiency of the kiln and improve the product. The exact date of this installation is not established, but the probabilities are that it occurred before May of 1954. In any event, May showed improvement to the extent that its daily rate of production represented only a 125-barrel drop in production compared with the starting rate.

A material referred to as oxide residue was introduced into the slurry in June, 1954, and during that month the daily rate of production increased by approximately 250 barrels to a point where an increase in production over the starting rate was experienced for the first time, to represent an increase in production over the starting rate in the neighborhood of 125 barrels. In July, CO_2 gas was introduced into the slurry to decrease its viscosity and thereby reduce the quantity of water which would be required to produce a free flowing slurry. Since after the slurry is introduced in the kiln, the water content must be driven off by heat, a reduction of water content reduces the amount of heat [3641] required to produce a barrel of clinker. A significant increase in production was thereafter experienced. A peak of daily production was reached in December, 1954, with a total average daily rate of a little less than 2,850 barrels.

The production may be compared with the 1950 and 1951 average daily production with linings of alumina brick and no shims of 2,600 and 2,668 barrels, respectively. The increase in production would represent a

recoupment of the loss of production with basic brick compared with alumina brick. In fact, the figures would show an increase of production of some 44 barrels compared with 1950 and a loss of production of about 24 barrels compared with 1951. It will be remembered that Anderson's original concern was a "loss in production caused by the additional heat loss due to the increased thermal conductivity (of basic brick) above a 70% alumina brick," and that his contention that this was between 100 and 200 barrels of clinker per day is traceable to a comparison of production with alumina brick in 1950 and 1951 with production with basic brick in 1952 and 1953. To make this comparison, the Court averaged the February through December, 1954, production as reflected by Exhibit G, a chart which was prepared from a great quantity of other material. [3642] This average is undoubtedly inaccurate, but accurate enough to illustrate that all of the changes made, taken together, about compensate for the loss of production observed by Anderson, which he attributed to a greater conductivity of the basic brick. Compared with the basic brick production of 1952, 1954 represents a gain of 78 barrels and compared with 1953, 1954 represents a gain of 176 barrels.

The use of oxide residue in the slurry was the subject of two patents which were issued to Anderson and Williams and assigned to plaintiff. The patents issued in 1947 and 1948. Both patents asserted that oxide residue is useful in making cement clinker. The CO_2 gas process is also the subject of a patent issued in 1957 on an application filed September 27, 1954, which was assigned by the inventor, Duncan R. Williams, to plaintiff. In connection with the prosecution, it was represented that when used with slurries with chemical

content such as slurries used at Laramie, it "gives a totally unexpected and commercially important result."

Plaintiff's Anderson, whose ideas are the subject of this entire litigation, wrote a memorandum on June 17, 1955, which reflects upon the evaluation of performance of the Laramie January, 1954, lining. The part pertinent to this discussion reads as follows: [3643]

> "I had moved to Los Angeles before these radial shims were installed and I am unable to give any data concerning the increased production or fuel savings due to this installation because almost at the time when these shims were installed CO_2 gas from the stack was introduced into the slurry to reduce the moisture of the slurry which would contribute to increased production and a hummer screen was installed at the end of the raw mill to remove oversized particles from the raw mill discharge. This would also result in increased kiln production."

Although there is conflicing evidence consisting in large part of the testimony of Lloyd Rentsch, it is established by a heavy preponderance of the evidence that the improvement of production achieved by the January, 1954, lining during its useful life was due to the several causes mentioned. While Anderson knew this in June of 1955, the contribution of the various causes awaited analysis by the Laramie operating personnel until more experience could be accumulated through successive installations.

In April of 1956, Potter, Assistant Superintendent at plaintiff's Laramie plant, reported to Williams, the Superintendent, on the improvements which contributed to increase in production during the period follow-

ing the first installation of Anderson's radial shims to April 14, 1956. He pointed out that the improvements had been both mechanical and operational. The first group of improvements made in 1954 with the contribution of each toward increased production was reported as follows: [3644]

"Average Daily Production—
1952-1953-1st half of 1954 2,311

1954 Improvements:

1.	Shims	19 bbls per day	
2.	Co_2 Treatment	114 " " "	
3.	Oxide Residue	218 " " "	
	Total	251 bbls per day	351

Average Daily Production at end of 1954 2,662"

Anderson made an undated report on the use of the radial shims which he called Circular Steel shims. It was made after five of such linings had been installed which had a total life of three years, three months and fifteen days. This fact and other evidence indicates that the time of Anderson's report closely coincided with the time of Potter's report quoted in part above. Anderson reported:

> "Average figures show 19 barrels per day increased production after use of circular shims."

The records of plaintiff establish that for the ten months and twenty days of life of the January, 1954, lining to reflect an increase in production, other substantial changes were required and that such increase could not be solely attributed to the installation of the short radial shims. On June 17, 1955, Anderson wrote

about this fact in the language quoted above. Anderson was in a position to know this on June 9, 1955, when he participated in the conference which is about to be described. He didn't know what each improvement contributed to production, and he knew that he didn't know. [3645]

THE JUNE 9, 1955, LICENSE NEGOTIATION MEETING

On June 9, 1955, Anderson and Lloyd Rentsch, representing plaintiff, and Palmer Ford and C. E. Miller, representing Kaiser, met to discuss the possiblity of licensing Kaiser to practice the Anderson invention. The issuance of a patent was pending. Rentsch wrote a memorandum of the meeting:

> "Conference and lunch Palmer Ford (Sales Engineer), Chuck Miller (Technical Sales), Kaiser Aluminum & Chemical Co. and F. J. Anderson. F. J. Anderson discusses and advises at length his experience with (1) Coke and full shims, (2) the radiation difficulties with Kaiser shims, (3) the conception of Anderson shims. This is a round table discussion on High-Alumina brick and Basic brick with regard to strength, rigidity, eutectics and coatings. A principal point was the Kaiser view that it is necessary to have full shims to preserve the eutectic to protect the coating. We were asked as to the scope of Monolith's application, e.g., did Monolith seek control of Kiln Ovality. Reply: Not at liberty to discuss at that time. We were shown the metal sketch of a encased insulated Kaiser brick recently installed at Victorville. F. J. Anderson and I separately concluded infringement, but made no comment. Later, I

stated that Monolith wished to license its patent, feeling that it was a contribution to the art and of distinct economic value. Reply: Kaiser felt that they had sort of assisted in the development of the [3646] Anderson shim and would like first crack at the license. Each (Ford and Miller) would discuss proposal with Management to determine interest and reply."

The reference in the memorandum to Coke and full shims is a reference to Anderson's memory of an experience of years before. Powdered coke was being used as fuel and it burned with a short hot flame concentrating the heat over a short area of the burning zone. The alumina bricks then being used in this area had a short life. To ease the condition, Anderson had placed radial metal shims between the rings of brick and in contact with the shell to dissipate heat through the shell. When using basic bricks and experiencing a hot shell, Anderson applied his earlier reasoning conversely to conclude that if the shims did not touch the shell, less heat would be transmitted to the shell.

While there is some indication that Ford was interested in having the meeting take place, the principal moving party was Lloyd Rentsch, representing plaintiff, who wanted to sell Kaiser on the idea of taking a license. Rentsch testified at length on the subject of the meeting. On direct examination he testified that he recited the success of the Laramie January 24, 1954, lining and that they attributed this to two aspects of the invention, (1) that the longitudinal expansion of the bricks, referred to as creep, would wedge against the radial shim and with oxidation the lining would be more monolithic; (2) the thermal characteristics which

were that the short radial [3647] shim did not serve to cool the whole eutectic but only drained the heat where it was most needed, producing a greater uniformity in the temperature of the lining and less distress to the shell; Anderson stated that he was losing production until he put the invention in and that it certainly worked. Just before the meeting broke up, Ford drew a picture of the Kaiser brick-shim unit which had just been installed at Victorville. Rentsch said that he thought that the Anderson invention had great merit and that they had great faith in it. Anderson said that it was a departure from the practice. Ford said that he thought that Kaiser might be interested in some form of license agreement and would consult management. Kaiser's representatives also challenged the explanation of benefits as not satisfying. They wanted more explanation.

On cross-examination Rentsch expanded upon what he remembered of the meeting, adding two important points. First, that the meeting and disclosures were confidential, and, second, that the patent and the invention included longitudinal short shims as well as radial short shims.

Ford and Miller testified that nothing was said about the meeting being confidential and that Rentsch talked about the radial shims of the Laramie January, 1954, lining exclusively.

The Court concludes from all of the evidence on the subject that nothing was said at the June 9, 1955, meeting about the meeting's being confidential or about longitudinal short shims being a part of the Anderson invention or being claimed as a concept of the plaintiff. The simplest and most direct evidence

relevant to this point [3648] other than the conflicting testimony of participants at the conference is the undisputed fact that Ford of Kaiser drew a picture of a brick with an attached shim which was short of the shell and with a part of the shim bent over the hot face and told Rentsch and Anderson that Kaiser was manufacturing and selling such an article. Neither Rentsch nor Anderson made any comment, but secretly concluded that this was an infringement of the patent they hoped would issue. Had there been even the slightest indication from either Rentsch or Anderson that the plaintiff claimed that a short longitudinal shim was within the ambit of the patent or license which was the subject of negotiation, such a subject would most certainly have been closely examined and at length. The possibility of a claim of infringement would have been obvious.

An incredible explanation has been offered as to why Rentsch and Anderson said nothing about such an item being the employment of concepts concerning which plaintiff claimed a proprietary interest. The explanation is expressed by counsel for plaintiff in his brief after trial that:

> ". . . For the short-shim concept to be valuable, it had to be tested in a complex piece of machinery, a cement kiln, which is accessible for such purposes only in periods of dreaded 'down time.' And Kaiser did not have facilities of its own to test the short-shimmed article, but had to run 'field trials' in customers' kilns. Thus, is it anything but reasonable that Monolith should assume that any so-called 'uses' by Kaiser prior to this date were 'field trials,' [3649] integral to the license negotiations, and consistent with a confidential relationship?"

The answer to the quoted question is that it is totally unreasonable. First, if such extensive testing was required for the value of the concept to be established, a point readily conceded, as well as established by the evidence, then plaintiff had no valuable information to disclose to Kaiser. As to the radial shims, it had one test which was more than complicated by other changes affecting production. As to longitudinal shims, it had no experience whatsoever. A test of radial shims with only one-half as much metal involved than when longitudinal shims are employed would be bound to reduce the amount of heat which could be conducted to the shell, whether they were positioned against the shell or short of it. Second, if Rentsch or Anderson entertained such an idea, why was it necessary to secretly conclude infringement? Third, how could Kaiser be conducting field trials integral to the license negotiations which only started that day?

By the same token, the negotiation was not being conducted in an atmosphere of mutual trust and confidence. At least, not on the part of plaintiff. Plaintiff's representatives were concluding that Kaiser was infringing, a hostile act, and said nothing. In an atmosphere of mutual confidence, a test would not be viewed as an infringement. Rentsch and Anderson were playing their cards close to their vest. The meeting was unquestionably an arm's-length negotiation on plaintiff's part. On the other hand, Kaiser forthrightly disclosed what it was doing in the same field of endeavor, but plaintiff kept its secrets.

A week after the June 9, 1955, conference, Ford [3650] watched the installation of radial steel shims in No. 3 kiln at Monolith and reported:

> "All personnel are watching these radial shims with great interest. Some are very skeptical regarding the outcome of these two runs. Will follow closely."

The "Some" are undoubtedly Monolith personnel. On June 23, 1955, Ford watched a radial shim installation in No. 4 kiln and noted problems due to lack of shims in the ring.

THE JULY 5, 1955, LICENSE NEGOTIATION MEETING

Rentsch spurred the license negotiation by a letter to Kaiser dated June 28, 1955, and on July 5, 1955, a second meeting was held, attended by Rentsch and Russell, a Vice President of Monolith, for plaintiff, and by Davis and Ford for Kaiser. Much the same material was again reviewed. Davis asked Rentsch if he had done any patent research, to which Rentsch replied in the negative. Davis said that he had a stack of patents a foot high and asked Rentsch for a look at the Anderson patent application, which request was refused. Davis inquired as to the basis for the suggested license to Kaiser. Rentsch said that plaintiff would expect a royalty.

Rentsch prepared a memorandum of this meeting (Exhibit 782) which was signed by Rentsch and his co-negotiator Russell. It recited that Ford of Kaiser had opened the discussion by pointing out that the Monolith lining with radial shims would be imperfect because the shape of the brick used had been designed to have

shims between them in the ring. They would, therefore, not fit perfectly. The memorandum continues, "Mr. Ford stated that the lining at Laramie was actually imperfect with the [3651] Kaiser shims—now with the Anderson shims the lining was perfect." The brick used at Laramie were designed for a kiln of a different diameter than the Laramie kiln, anticipating the use of shims in the ring. It just so happened that omitting the shims in the ring would result in a perfect fit.

Davis pointed out that at least one customer experienced longest lining life with the most perfect installations. This contributed one reason why the radial shim installations at Laramie would be expected to experience longer life than previous linings. It is also to be observed that the Kaiser personnel referred to the radial shims as Anderson shims.

As noted previously, Davis stated "that some brick coatings were improved by radiating more heat away from the hot face than normally, and some brick coatings were improved by radiating less heat away from the hot face. He wondered if we had any information to determine if we were in either category. Mr. Rentsch replied that he did not know." The memorandum also recites, "Mr. Rentsch advised early in the discussion that Monolith's application was based on both a transverse and a longitudinal installation and this was said by them (Mr. Ford and Mr. Davis) to be original information on the subject."

The statement by Ford and Davis that it was news to them that longitudinal shims were covered by the patent was not apparently disputed by Rentsch, a circumstance that would cast doubt upon Rentsch's testi-

mony that they were so advised at the earlier June 9 meeting. Even if Rentsch previously had entertained the thought that he had said enough to let Kaiser know that their product was covered by the pending patent and that Kaiser was simply engaging [3652] in a cooperative experiment, surely this thought would have been dispelled by the reply of Ford and Davis that this was news to them and would have given Rentsch cause for concern and to speak out. This inconsistency alone casts doubt upon the reliability of the recitation. Although Russell also signed the memorandum, a conflict in the testimony of these two gentlemen on the subject is indicative that whatever was said on the subject of the contents of the patent application failed to convey the impression that it covered the Kaiser development called to Rentsch's attention at the last meeting.

Rentsch testified that it was stated that this conference was confidential and that he said that the patent application claimed both longitudinal and transverse shims spaced from the shell. In this he was not supported by the testimony of his co-representative, Russell, who testified that nothing was said about the meeting being secret or confidential and that he failed to get the impression or any understanding that Kaiser's spaced shim article was covered by the pending patent application. Russell also testified that Rentsch advised the Kaiser people at the meeting that the function of the Anderson shim was not to prevent heat loss, but to diffuse and carry away heat.

Again, from all of the evidence, the Court finds that the meeting was not stated to be confidential, nor was it disclosed to Kaiser that the Anderson pending patent application covered longitudinal short shims. It is

clear [3653] from subsequent events that whatever Rentsch said to Ford and Davis about the patent application wasn't understood by them to mean that the Anderson shim was anything other than the radial shim. No copy of the memorandum was sent to Ford or Davis or Kaiser at the time it was prepared. A chain of correspondence between the parties about the proposed license to Kaiser followed the meeting. Several intervening developments are also a part of the picture.

LICENSE NEGOTIATION CORRESPONDENCE

Three days after the July 5, 1955, conference, Davis of Kaiser advised Rentsch by letter:

> "As a prominent manufacturer of cement kiln hot zone liners we are always very much interested in any development which will contribute to longer, more economical hot zone service. Your group has allowed our sales engineers to follow this development and we are extremely grateful for this privilege and for the fact that you thought of our company first, as an exclusive licensee.
>
> "It has been our experience that a surprisingly large number of carefully observed field trials are required to evaluate both refractories themselves and various methods of refractory construction. This of course is so because of the great number of other variables which come into play, even in the same furnace [3654]
>
> "Since you are anxious to conclude the matter at an early date, we suggest that we could come to a somewhat more valid conclusion regarding the matter if we were to thoroughly understand the reasoning behind the innovation. Since you have

already made patent application, or at least have prepared a complete disclosure, we would suggest that we be permitted to review one or the other. I believe then we could relate that information to our experience and come to an early decision.

"We certainly do appreciate your offer, and as I explained at lunch the other day, if we have such an agreement with you we want it to work to your entire satisfaction and never become a source of misunderstanding between the companies."

By letter of July 15, 1955, Rentsch suggested three considerations before entering into a license:

"1. The actual interest of a supplier whose sales would be reduced to the extent of lengthening the life of his product.

"2. Whether a true licensee relationshp would be profitable under which the licensee became the agent and trustee of the licensor and had not and would not assume any adverse interest.

"3. Whether the several additions to the Monolith application filed on February 4, 1955, should be perfected before disclosure thereof." [3655]

Davis replied on July 2, 1955. He said that he had to admit that he did not understand Point 2, but answered on the assumption that it was a further amplification of Point 1. He pointed out that the backbone of their sales policy had been a study of methods of installation which would lengthen lining life and that this has resulted in a "most remarkable increase" in sales. On the third point, he said:

"As to Point 3, it would seem that that decision is primarily yours. However, since we make no

claim to the method of installing basic brick practiced by you on June 14th in lining the hot zone of No. 3 kiln at Monolith, we would be willing to sign a waiver of any claim to this method prior to being permitted to view additional disclosures which are not yet included in your patent application. Our Mr. P. B. Ford, as you may know, was present during part of the installation to which we refer."

Plaintiff contends that it is significant that Davis does not refer to the Kaiser short shim installation at Victorville. Or course, there was no need to, since this unit and installation had already been fully disclosed to Rentsch at the June 9, 1955, meeting. After both meetings there is no question but that Kaiser had the impression that the "Anderson shim" which was the subject of the pending patent application and all of the discussions and information received by Kaiser was the radial shim and no other. If Point 2 was intended to refer to the Kaiser product, this fact was so carefully concealed from Kaiser that Kaiser would have no reason to even suspect such intent. [3656] Had plaintiff intended such reference, the normal reply to Davis' letter in which he said that he does not understand Point 2 would have been to make the point clear. Instead, Rentsch replied to Davis on August 15, 1955, that he and Monolith's executives had attempted to "block out a form of contract covering our means of installing fire bricks," and that he was forwarding it.

The form of contract was enclosed and is Exhibit 953 and HH in evidence. Plaintiff attaches significance to a recital in the document that refers to "the technical information and any Applications for or Letters Patent issued . . ." The body of the instrument re-

fers to "technical information heretofore or hereafter furnished to Kaiser, whether described in pending Applications for Letters Patent or Applications hereafter made for Letters Patent hereafter issued. . . ." The language is so vague and uncertain that it conveys no hint of the secret conclusion of plaintiff that Kaiser's unitary article used at Victorville infringes the pending patent.

Meanwhile, one of the Monolith kilns using radial shims had terminated its run due to a badly cracked shell. Ford reported to Kaiser on July 27, 1955:

> "We are unable to offer any conclusvie evaluation on the radial shim installation on this run."

On October 19, 1955, Rentsch again wrote to Davis saying that in the absence of a reply to his last letter, he was uncertain whether the proposal was still being considered or that Kaiser wanted to continue negotiations. [3657] Davis replied on November 2, 1955, agreeing in principle that plaintiff should have assurance that its invention would be diligently exploited, continuing:

> "There is a difficulty however, on our side, and that is simply that in a highly competitive business such as this, we must be continually, through both research and field work, exploring and developing among other thngs, improved methods of installation. This means, of course, that we already have conflicting interests and must, of necessity, retain these and acquire others that we may invent or discover in the future.
>
> "The second problem, which is equally thorny, is that we have found that operating practice, kiln conditions and kiln equipment vary so much from

place to place that we believe there is no one real answer to the best possible installation of basic brick.

"This all seems to indicate then, that we could not in all sincerity, undertake to exploit your inventions in the manner described."

Davis adds that they would be a good candidate for a non-exclusive license.

Davis had applied for a patent on September 9, 1955, which patent was ultimately issued on April 8, 1958, as Patent No. 2,829,877. Plaintiff attaches significance to the fact that Davis did not mention this or that Kaiser considered that short-shimmed kiln lining construction was in the public domain. Again, there was no occasion to do [3658] so since plaintiff had never told Kaiser that plaintiff claimed any short-shimmed design except the radial short shim.

On November 9, 1955, Davis wrote to Mr. Coy Burnett, President of Monolith Portland Cement Company, as follows:

"At the request of W. A. Marsh, I am enclosing the pertinent portions of my file of correspondence with Mr. Lloyd W. Rentsch. The subject matter deals with the question of exploiting your Company's inventions with respect to the installation of rotary kiln liners.

"To remove a possible source of misunderstanding. I might mention that we have interpreted 'conflicting interest' appearing in Paragraph 4 of the suggested Agreement, as any other method of installing kiln liners.

"You may also be interested to know that our shop which has been fabricating your special cir-

cular shims has developed a slight modification in design which will materially reduce costs. This suggestion, in detail, will be submitted to your plant in the usual manner."

Burnett replied on November 14, 1955:

"I believe the position taken in your November 2nd letter compels us to say that we will expect to obtain all profits which are made by your company because of the information developed at our plant and delivered to you with reference to the Anderson shims, and unless we [3659] can cross that bridge, I would not think it worth while to have any joint interest in this venture, except as related to the purchase and sale of specific materials."

The reply from Davis, dated December 1, 1955, reads:

"Thank you for your letter of November 14th. Your suggestion that profits from our sale of the Anderson shims to companies other than your own revert to Monolith Portland Cement Company, is agreeable to us.

"Since we concur on this fundamental, perhaps you would care to forward a suggested agreement."

The next several items of correspondence demonstrate that Kaiser considered that the proposed license related to the radial shims only and the correspondence as a whole shows that the parties were dealing at arms' length on the subject of a license. On December 6, 1955, Burnett wrote to Davis:

"Answering your letter of December 1st.

"Under the circumstances, it seems to me that all that would be in order would be that you pay us a certain percentage of the sales price in which the

Anderson shims have contributed to the sale or been used; and the future sales would need to be submitted to us for our approval in advance unless you take some responsibility in connection with the promotion of the use of these shims.

"If you indicate an approval to these principles, I will ask Mr. Lloyd Rentsch, who is [3660] in charge of our patent affairs, to attempt to work out something. If you agree only to the accounting for sales heretofore made, I should still like him to attempt to learn as much as he could of the value of the contribution to the art of the Anderson shim and make some fair valuation thereof, as I am unable to personally follow out ventures of this sort."

Davis turned the matter over to Kaiser's Legal Department, Mr. R. W. Koskinen particularly, who asked Rentsch for a draft of agreement. Rentsch replied that he would "in the near future," but on January 19, 1956, Rentsch advised:

"Mr. Burnett's letter of December 6, 1955 to Mr. Davis asked for the acceptance of its terms as a condition of our taking the step to determine value.

"If this is your understanding, please advise that you are prepared to accept those conditions and I will proceed with the study."

Koskinen replied:

"I have your letter of January 19, 1956 concerning the terms upon which we might undertake the sale of Anderson shims. As a general proposition we would be willing to give you any profit which we might make from the sale of An-

> derson shims to companies other than Monolith; however, we would be unwilling to give you a percentage of the sales price of sales of our refractories in which Anderson shims might [3661] incidentally be involved. Nor would we be willing to submit future sales of our refractories to you for your approval."

Clearly, this reply interprets Burnett's December 6, 1955, letter about paying plaintiff a percentage of the sales price in which the Anderson shims have contributed to the sale as a reference to the radial shims which Kaiser had made for plaintiff and Monolith, since such shims had been made for and sold exclusively to them, completely missing the inference (which plaintiff now argues was plainly present) that the Kaiser unitary brick short shim articles were Anderson shims in the eyes of plaintiff. This undoubtedly was or should have been obvious to plaintiff. On the other hand, if the Burnett letter is construed as a reference to the Kaiser unitary brick and short shim article, the letter itself indicates that plaintiff knew of Kaiser's sales. So Kaiser couldn't possibly be deceiving plaintiff. With this in mind, the indefinite phraseology of plaintiff, which can be said to convey its concept only inferentially at best, seems to be an attempt to obtain a commitment which is subject to a broader than obvious interpretation.

In connection with the production of radial shims for Monolith, Kaiser suggested a change in order to effect an economy. Before the drawings reflecting the change left Kaiser's drafting office, a rubber-stamped legend was [3662] placed on the document, saying that Kaiser claimed any patentable matter reflected upon the draw-

ings. When this reached Schoonover of Monolith, he wrote to Ford of Kaiser. This was January 16, 1956:

". . . We see nothing in your drawings SK16 and SK18 which does not, in our opinion, obviously fall within the subject matter we have covered by a pending U.S. patent application. Further, we consider that all of the material shown in your drawings has been directly derived from the disclosure to you of this concept by our organization.

". . . Further, we inform you that Monolith will consider your supplying drawings of shims of this category to others as a breach of Monolith's confidential disclosure of this information to your Company which may be considered the subject of contributory infringement when patents issue on Monolith's development."

Davis replied to Schoonover on February 1, 1956:

"This is in reply to your letter of January 16th, addressed to Palmer B. Ford. The statement on Drawings SK16 and SK18, to which you refer, is a standard one appearing on all our drawings and is for our protection only.

"The intent of the first sentence is to protect ideas originating with us. We certainly make no claim that material on the drawings in question originated with us and we therefore [3663] make no claim to property rights.

"We understand and agree, as we have in the past, that your disclosures to us in regard to the Anderson devices have been confidential and our people have all been instructed accordingly.

> "We appreciate the opportunity of working with you on any matters relating to refractories and trust that this letter leaves us both with a complete understanding of this particular situation."

Bearing in mind that the sketches referred to showed radial short shims only and that no other Anderson device and particularly no single brick short shim with a part bent over the hot face had ever been shown to Kaiser by plaintiff or any of its agents, the reference to Anderson devices was reference to Anderson's concept of a shim circumferential in design to be installed between rings transversely oriented to the axis of the kiln. The use of the plural "devices" is consistent with the fact that two shims are shown in the referenced drawings and also that the radial shims had been in a stage of development and several versions were known to Kaiser.

Counsel for plaintiff would have the Court refer to the draft of the license agreement furnished to Kaiser by Rentsch for a definition of "Anderson devices." This draft was an unilateral suggestion of the plaintiff which was unacceptable to Kaiser. Furthermore, alternative suggestions had already been forthcoming from Barnett on behalf of plaintiff. While these had been rejected, it must at least be recognized that both parties had moved away from the proposal of the draft with its loose and uncertain language. In context, it is preposterous to [3664] suggest that this letter means to refer to anything but the radial shim design.

This letter is the springboard for arguing that it operates to convert every conversation and every observation from the Johnson-Putnam telephone call of August 27, 1953, to date into a confidential communication. It

could not possibly be so understood by any reasonable person and the evidence against such a concept is overwhelming. Furthermore, plaintiff argues that since the sketches referenced in the letter show a space between the cold edge of the shim and the shell of the kiln, this letter constitutes a disclosure of spacing per se and acknowledges this to be a confidential disclosure. This is neither the intent nor the effect of the letter, but rather a gross perversion of its terms and intent.

On February 13, 1956, Rentsch, on behalf of plaintiff, advised Koskinen of Kaiser as follows:

> "Monolith is certain that, in most if not all applications, the Anderson shims have value in amount which will contribute to or control the sale of refractories.
>
> "Two of the considerations Monolith expects in exchange for a license is adoption of the above principles together with an assumption of responsibility heretofore indicated both of which fail of your approval.
>
> "As further negotiations between Kaiser and Monolith seems unwarranted, I will initiate discussion with other refractories manufacturers and continue the evaluation of the Anderson shims."

On February 9, 1956, Ford reported a call on Monolith which reads in part as follows: [3665]

> "Experimentation on reduction of hot zone heat loss continues with the drilled brick 70% alumina and new MZC 4 sided brick which is accomplished by the use of circular steel shims between the rings and regular 9 x 5-7/8 flat shims bent 90° at 2" between courses . . . I have a few pictures of this installation if anyone is interested (confidential not for publication)."

On February 15, 1956, Ford reported to Putnam:

> "Enclosed are a few pictures which you may find interesting. Please refer to the numbers on the back of the photographs.
>
> * * *
>
> "Picture 4 shows Dough Kingsbury at Monolith holding a circular shim and a regular 9 x 6 shim bent 90° at 2″ from the hot face, which were intalled in this 9″ PCA unburned lining. In effect this method metal cases the brick on four sides, with a 2″ insulating space between the cold face of the shim and the kiln shell. Picture 5 shows the two types of shims being installed in the above jacks.
>
> * * *
>
> "All these pictures are classified as Confidential and are not to be circulated outside our company . . ."

These two reports are the first indication of a short shim bent over the hot face and short of the shell being used by Monolith. Both followed the February 1, 1956, Davis letter [3666] and contributes nothing to the Kaiser conception of the Anderson devices. Nor do they add anything to the concept of confidential relationship of the parties. They indicate simply that discretion was exercised by Kaiser concerning publication of specific details of what an identified customer was doing.

Notwithstanding the apparent termination of license negotiations, the parties still toyed with the idea. On May 21, 1956, Kaiser's expressed desire to make a trial

run of Anderson shims at the Permanente Plant was agreeable to Monolith.

> "Monolith is agreeable to such plan provided that we obtain performance data and inspection rights. Naturally, we have suggestions on installation and operation for a controllable trial run."

The only conceivable Anderson shims referred to would be the radial shims. Kaiser had ample experience with the short longitudinal shim. Both parties understood the term. Plaintiff didn't ask what kind of Anderson shim; it knew that Kaiser considered the Anderson shim to be the radial shim. This view is reinforced by the interoffice memorandum of Ford to Putnam of Kaiser, dated May 22, 1956.

In this memorandum Ford recounts a conversation with Rentsch about the proposed test at Permanente, the possibility of taking a license, royalties and conflicting interests and at the Laramie plant:

> ". . . is the only one that has proven the feasibility of this system . . .
>
> "I then described our recent development of [3667] the T-3-16 brick, the 30 installations made to date, etc., with still no positive conclusion. I then advised him that it may be possible to make a trial at Permanente Cement to provide the empirical data needed to pursue this problem to a mutually satisfactory conclusion.
>
> "It doesn't take much imagination to see how this 'gimmick' could revolutionize the cement industry if the Laramie rumors are true. I'm sure our competitors could use such a gimmick to regain lost

ground in this industry in case we forfeit our original interest in this situation.

"Therefore, it is my suggestion that we work out a trial at some plant other than Monolith, preferably Permanente, where radiation loss and short service is a problem. After a full evaluation we'll both know what we're talking about."

Rentsch disputes the part about installations of T-3-16 brick, but for reasons to be mentioned, the memorandum of Ford is more reliable. The gimmick he would like to try could hardly be a longitudinal short shim such as Kaiser's own, nor would the Laramie reference make sense unless he referred to the radial shim.

In October, 1956, Kaiser submitted that it referred to as a sneak preview of advertisements about to be published offering the Kaiser Unitab brick to the public. This was the unitary brick shim combination with combustible mastic to compensate for in-the-ring expansion and an attached cardboard spacer on the end of the brick for [3668] longitudinal expansion. The shim is shown, but on the hot face, and either spaced from the shell or not as desired.

It was then clear to plaintiff that Kaiser would not enter into a licensing agreement broader than the radial shim. On November 5, 1956, Monolith Portland Cement Company wrote to Kaiser Aluminum & Chemical Corporation as follows:

"Your advertising circular, enclosed in an envelope postmarked San Francisco October 18, 1956, has been brought to my attention. This is to advise that Monolith believes that the disclosure contained in the circular is an infringement upon

> the Anderson Shim, upon which application for Letters Patent are pending. We wish to further advise that it is Monolith's position that the idea pertaining to the Shims was disclosed to your Corporation, in trust and confidence, and your exploitation of the idea entitles Monolith to be compensated."

Kaiser replied that the Unitab was its own development and the lawsuit eventually followed, being filed on June 6, 1958.

DEFINITION AND VALUE OF THE DISCLOSURES

Plaintiff bases its claim upon several legal theories, but in argument puts chief reliance upon one. This is the charge that plaintiff confided certain information to defendants; that defendants breached the confidence and thereby either destroyed the value of such information to plaintiff, in which case plaintiff is entitled to damages, or used such information for defendants' benefit, in which case defendants would be unjustly enriched unless compelled to pay the reasonable value thereof to plaintiff. [3669]

In cases of this kind it is usually conceded that the subject information has value to the parties, but in this case one of the hotly contested issues is whether the information allegedly confided has value. Conversely stated, defendants contend that whatever information they received was misinformation. Plaintiff has the burden of establishing that the information it claims to have confided is not misinformation, but, on the contrary, it is factual, truthful and useful to at least plaintiff or defendants.

The nature of the information claimed to have been confided is defined in the pretrial order at page 32. Briefly stated, it is: That if the shims used between basic bricks in the ring are suspended on the hot face of the brick so that a space is left between the shim and the shell, a more efficient and more durable kiln and kiln lining will result. Pursuing the threat of analysis commenced above, plaintiff must prove that this is so. In response, plaintiff endeavored to show that a lining so constructed would increase daily production and lengthen lining life.

The evidence shows that during the time that the disclosures were being made, plaintiff had no experience with short shims between the bricks in the ring which would support the assertion that such a construction would produce a more efficient and more durable kiln and kiln lining. Its experience in support of this tenent was limited to the use of short radial shims positioned between the rings of brick in the kiln. Plaintiff contends that experience with radial shims is applicable to shims in the ring. Defendants contest this, but as a first step deny that the radial short shims produced the claimed result in the terms of the pretrial order or in terms of increased daily production and extended lining life. [3670]

In argument plaintiff has many ways of stating the claimed disclosures. It is argued that Anderson had two principles in mind, "one was the thermal function of short shims and the contribution to kiln efficiency. . . ." The other was the structural stability of the radial shim. It is argued that "the connection between heat loss and kiln efficiency" was the concept which was completely new and novel to Kaiser. Kiln efficiency is an

elusive expression. From the standpoint of better insulation, short shims of course improved it. Any time change which reduces the consumption of fuel, increases lining life or in any other way aids in the production of clinker at reduced cost improves kiln efficiency. The kiln efficiency claimed by plaintiff is a notable increase in daily production.

Plaintiff argues:

> ". . . As we have pointed out elsewhere, one of the important parts of the Anderson invention was not the relatively small amount of BTU's thus saved from being dissipated by radiation through full shims, but that such small amount of heat was saved at the *critical* exothermic clinkering point in the burning zone."

The "critical exothermic clinkering point in the burning zone" is not a point or area in the kiln; it is a condition of heat. The short shims are used throughout the burning zone and the existence of a space between the shim and the shell improves the insulation of the kiln in this area. The argument quoted is that insulation might be expected to result which would be reflected in reduced fuel [3671] consumption, or conversely, in a predictable increase in production without an increase in fuel consumption, but that surprisingly the increase in production obtained was greatly in excess of the predictable consequence of the saving of heat through improving the insulation or prevention of the loss of a given quantity of heat. The evidence does not establish that such a result obtained or that the critical exothermic clinkering point is maintained in any way other than the application of heat from the only source of heat available, to wit, the flaming fuel.

Plaintiff claims to have discovered the valuable information and the beneficial results from the installation of Anderson's radial short shims at Laramie. But plaintiff failed to establish by a preponderance of the evidence that the increase in production or the increase in lining life claimed for the Laramie experience was attributable to the short shims used, or that an increase in production or an extended lining life was to be expected elsewhere if the short radial shims should be used. The evidence showed that other variables were introduced into the kiln which could account for the results. More will be said presently in this analysis of the case about these other variables. Experience with such basic brick linings at Monolith failed to confirm these claims and Monolith abandoned such construction. [3672]

Assuming, however, that the results claimed for the Laramie radial short shim linings were as claimed by plaintiff, Defendants' next position is that these results are not analogous to short shims placed in the ring. A lining constructed with short shims placed between each brick in the ring covering most of the side faces of these brick has much more steel in it than a lining constructed with radial shims which cover most of only the smaller end faces of the brick. Since plaintiff asserts that its construction was a delicate and precise balance of restriction of just the right amount of heat, the balance would be upset by the additional steel. The short shim is a restriction of loss of heat via the steel in the shim; so, of course, the more steel, the greater the loss of heat. That the balance would not be upset would be theory rather than information because plaintiff had no experience with the short shims

in the ring which was claimed to have produced any of the beneficial results or which could be the foundation of any knowledge on the subject.

Furthermore, defendants point to the fact that all of plaintiff's installations spaced the radial shims one and one-half to two inches from the shell and that all information from plaintiff was in this context. One of plaintiff's experts testified that at least one inch should be left between shim and shell to effectively practice Anderson's teachings. This [3673] unexpected production increase was the discovery of value and plaintiff freely admits that it is an elementary principle of physics (not valuable information which could be the subject of a confidence) that merely breaking contact between the shim and the shell would reduce the radiation of heat from the shell through the shim. Kaiser asserts that it did not employ any principle related by plaintiff by leaving three-quarters of an inch space or less between shim and shell. In any event, it is well established that plaintiff had no experience with such construction and no actual information as to how it would work.

Plaintiff conducted an elaborate experiment at Monolith to directly prove, rather than by analogy, the verity of the information allegedly confided. Two kilns which were as much alike as could be were employed. The hot zone lining of one kiln was constructed with shims in the ring laid up to be in contact with the shell. The other employed short shims in the ring laid up to have a space of one inch between the cold edge of the shim and the shell. The experiment was weighted in favor of better performance for the kiln with short shims. Even so, the results were inconclusive.

The experiment did not establish beyond the probabilities of error that a short-shimmed lining might be expected to result in greater production than a lining with the shims in contact with the shell, or that short-shimmed linings might be expected to have longer life. [3674]

As further proof of the pudding, so to speak, plaintiff points to the commercial success of the Kaiser Unitab and the advertising of this product as proof of the fact in issue. Commercial success of the Kaiser Unitab is admitted and the advertising of this article by Kaiser was produced. The evidence shows that the commercial success of the Unitab can be attributed to a unique combination which supplies in a single unit several essentials of hot zone kiln construction.

Prior to the Unitab, and its antecedents in development, refractory bricks were laid in rings. Between each brick a separate shim was placed. A certain number of cardboard spacers, which were the size of a shim, were also placed in each ring to compensate for the expansion of the bricks in the ring when they were heated. With the cardboard spacers, the ring could be laid up tight. Then when the kiln was fired, the cardboard burned out and the bricks expanded to occupy the space the cardboard originally occupied, thus maintaining a tight ring. To compensate for expansion laterally, that is, in the direction of the axis of the kiln, additional cardboard spacers were required between rings. The Unitab reduced all of these separate items to one by gluing the shim to the brick with a combustible mastic of just the right thickness to compensate for expansion in the ring and by gluing a cardboard spacer to the end of the brick to compensate for expansion of the rings along the axis of the kiln. [3675]

The advantage of such an article is self-evident. One installation operation serves for what was formerly three. The savings in installation labor alone makes the article attractive. In addition to this unitary feature, the shim is bent over the hot face. This identifies the hot face from the cold face which is sometimes difficult and always critical. The danger of a brick being placed in upside down is eliminated, installation is speeded and inspection made easy. When the kiln is heated, the iron on the hot face promotes the formation of a coating. True, the shims are short of contact with the shell, but by three-quarters of an inch or less. This represents simply a lack of contact with the shell resulting in less radiation through the shell, rather than a studied attempt to obtain a particular optimum of retention of heat to accord with the claimed teachings of Anderson's disclosures.

The commercial success of the Unitab lies more in its convenient unitary character than in the fact that the shim is short of the shell. It is an article which was developed to meet competition and the demands of Kaiser's customers. Kaiser's advertising of this article does not rely more upon the short shim than upon its other features. In fact, the reverse is true. The commercial success of the Unitab does not establish the claims of plaintiff. Plaintiff has not shown by a preponderance of the evidence that the short shim, whether radial or in the form used by Kaiser, does in fact improve production of clinker or increase lining life. [3676]

Kaiser's advertisements claimed increased kiln efficiency. In terms of reduced cost of clinker, reduced labor costs alone would sustain the advertisement. In

terms of longer lining life, in the long run the insurance against faulty installation would be sure to produce a better lining which would last longer. Lasting longer, taking less time for installation, would both contribute to an increase in production. Kaiser's claims for its product may be justified without reference to a noticeable increase in daily production and they do not constitute an admission of the efficacy of spacing the shims from the shell in terms of plaintiff's claimed disclosures.

Further pursuing the subject of the information alleged to have been confided, the information must be new to the recipient. Defendants claim that they employed their own knowledge in the development of the Kaiser Unitab and the information contained in the Kaiser advertisements and that such knowledge was either independently discovered or developed by Kaiser or was obtained from others or was already known to Kaiser.

To cap this phase of the case, the record taken as a whole shows that plaintiff's disclosures to defendants were disclosures of the configuration, placement and installation of Anderson's radial short shim concept and nothing was said by plaintiff about employing a short shim between the bricks in the ring. The evidence, particularly the testimony, on this point was conflicting, but careful consideration and analysis of all of the [3677] evidence compels resolution of the conflict in this manner. This points up the importance of whether the two constructions can be said to be so analogous that the performance of one would establish the performance of the other. The differences compel the conclusion that this is not to be expected

and that a confidence regarding radial shims would not suggest to defendants that plaintiff intended it to be considered a confidence regarding shims in the ring.

Plaintiff has dismissed the matter of bending a part of the conventional shim over the hot face of the brick to hold it out of contact with the shell as a simple mechanical solution to the problem. With this, the Court agrees. The record shows that it has readily occurred to any mechanic or kiln operator confronted with the problem. Plaintiff has not established that a stronger kiln or kiln lining is obtainable by use of short shims in the ring. No evidence was specifically directed to this concept. Plaintiff has not proved that such construction provides a more efficient kiln except in the sense of being better insulated. No notable increase in production has been proven to be attributable to the employment of short shims in the ring.

It thus appears that in light of the evidence adduced, plaintiff's valuable information, when shorn of semantic embellishment, amounts to nothing more than [3678] that it is desirable to leave a space between the shim and the shell to restrict radiation of heat through the shell by way of the shim. Even if it be established that this information was passed on in confidence, this fact would not support a judgment for plaintiff because the fact that such a space will inhibit the transfer of heat from shim to shell is known to all and the fact that it is desirable to do so was specifically known and recognized by Kaiser, documented in the patent art and well known in the cement industry. The specific means of a bent-over shim to leave the space was suggested by Davis of Kaiser and others, but not by plaintiff.

THE ATMOSPHERE OF THE NEGOTIATIONS —KAISER IS NOT GUILTY OF A SPECIES OF FRAUD

Turning now to the part of the equation that the information was confided to Kaiser in an atmosphere of trust and confidence, the opposition to the plaintiff's tenent is equally uncompromising. The Johnson-Putnam telephone conversation of August 27, 1953, was not a disclosure in confidence. It was an inquiry posed to Kaiser in the same atmosphere of free discussion of kiln problems which had prevailed before. Enough has been said about this. [3679]

On June 9, 1955, the date of the original license negotiation, plaintiff's experience with short radial shims was limited to the January, 1954, installation at Laramie. On July 5, 1955, the second negotiation meeting, plaintiff had little additional information. Plaintiff's representatives, Rentsch and Anderson, knew that the results obtained during the life of this lining were not all attributable to radial shims. They knew that they had not themselves evaluated the contributions of CO_2 gas, oxide residue and the installation of a Hummer screen.

Rentsch and Anderson knew that the introduction of some of the changes made to produce the results achieved during the life of the January, 1954, lining had a material effect on the production at Laramie because of the chemical composition of the slurry used there and that the same results could not be expected at other cement plants which did not use slurry of that chemical composition. For example, at Monolith slurry of a different chemical composition was and is used and

subsequently the unexpected increase in production attributed to the radial shims at Laramie was never experienced at Monolith, thereby indicating that the results claimed were not attributable to the radial shims alone, and very likely were not to be expected elsewhere. The subsequent analysis of the production at Laramie by operating personnel, which was also accepted by Anderson, assigning only 19 barrels of increased production to the shims, indicates both the uncertainty which Anderson and other operating personnel knew to exist and also their competence to make the analysis. [3680]

Nonetheless, plaintiff's negotiators, Anderson and Rentsch, represented to Kaiser that the shims alone accounted for the increase in production when they not only knew that they did not know this to be a fact, but that at the time of the June 9, 1955, conference, Anderson in particular was unable to give any data concerning the increased production or fuel savings due to the installation of the shims because of the introduction of other elements for the purpose of improving the production of the run. They also knew, or had every reason to believe, that Kaiser was competent to evaluate the results if given the facts. It is perfectly obvious that it was intended that Kaiser should rely upon the representation that the increase in production was attributable to the shims alone.

Since June 9, 1955, plaintiff was aware of the fact that Kaiser was manufacturing and had sold and was selling a brick short shim unitary combination. From the moment that this fact was made known to plaintiff at the first conference concerning a license from plaintiff, plaintiff concealed the fact that it expected

the impending Anderson patent to be broad enough to cover this article. Plaintiff now claims that during the course of the negotiations Kaiser surreptitiously developed this unitary product which became the Unitab from valuable information obtained from plaintiff and is guilty of a species of fraud. It claims that its disclosures of increased production formed the only information available to Kaiser upon which to base Kaiser's Unitab development. The error in this contention has already been the subject of comment. The Unitab was Kaiser's own independent development. [3681]

While keeping its discussions and disclosures in the context of the radial shim, plaintiff attempted to negotiate a licensing contract with Kaiser which would be broad enough in its terms to subject the Kaiser product to licensing provisions including royalty payments. Plaintiff's conduct is only consistent with an arms'-length negotiation. In a negotiation of this character, disclosures are made in the hope of consummating an agreement. Failing of this objective, disclosures are not confidential unless expressly so understood or the circumstances are such that the opposing party is, or should be, aware that they are confidential. There was no express condition of confidence nor were the circumstances such as to indicate to defendants that a confidence was intended to be broader than the Anderson radial short shim concept, which alone was the subject of the discussion. The radial shim concept is not the subject of this lawsuit.

A letter dated February 1, 1956, from Davis of Kaiser to Schoonover of Monolith, says in its two most important parts, ". . . We certainly make no claim that the material on the drawings in question originated

with us . . .," and, ". . . your disclosures to us in regard to the Anderson devices have been confidential. . . ." The drawings were the drawings of radial short shims. The Anderson devices were unquestionably the same radial short shims shown on the drawings or the several versions of Anderson's radial short shims known to Kaiser. In the context of the correspondence and all relevant surrounding circumstances, this letter did not refer in any way to short shims in the ring. [3682]

Plaintiff has tried to cast this letter in the role of a deceitful act designed to lull plaintiff into a sense of security, while with complete duplicity defendants proceeded to stall the license negotiations and develop the Unitab behind plaintiff's back. This version necessarily demands an explanation of Rentsch's memorandum of the June 9, 1955, license negotiation meeting which recites that he and Anderson were shown a sketch of a metal encased insulated brick recently installed at Victorville and "F. J. Anderson and I separately concluded infringement, but made no comment." While Rentsch testified that he thought that he could rely upon the patent for protection, the explanation tendered for this conduct is that Rentsch and Anderson thought that Kaiser was simply engaging in experiments in aid of Monolith's development which it knew Monolith intended to patent and then perhaps license to Kaiser. The alternative exlpanation for showing the sketch is that Kaiser, by an early and full disclosure of its own development, sought to avoid later misunderstanding as to what should be subject to license.

The record shows that Rentsch confessed his own and Anderson's lack of candor on behalf of plaintiff on June 9, 1955. By contrast, on the face of things,

Kaiser's conduct is completely consistent with straightforward business practice. The adoption of plaintiff's version would compel the acceptance of a strained explanation of Rentsch's conduct and an out-of-context construction of the February 1, 1956 letter. Among the out-of-context constructions of the letter which plaintiff urges upon the Court is that Kaiser concedes that the idea of spacing came from plaintiff because the drawings show a radial shim spaced from the shell. For these reasons, among others, [3683] the Court believes that in the license negotiations there was no mention of or disclosures by plaintiff regarding the short shim in the ring and that the negotiations were at arm's length and that any disclosures which were made were with reference to the radial short shim and were induced by plaintiff's desire to effect a license contract and not by trust and confidence in Kaiser as a faithful assistant. Kaiser was not guilty of any conduct which might be characterized as a species of fraud.

THE CONFLICTING EVIDENCE

As is to be expected, the position of plaintiff rests upon evidence which conflicts with the foregoing recitation of facts. In light of the enormous expense of preparation of this case for trial with its elaborate and extensive discovery, its length, the bitter contest of the trial, the voluminous record and the endless exhibits, the greatest care has been taken to exhaustively review the record, examine exhibits and consult the briefs of the parties. No different view of the facts than that already expressed is compelled by the exhibits taken collectively or individually, but in context with the others.

The conflict which exists in the evidence arises from the oral testimony of certain of plaintiff's witnesses. If their testimony be accepted, then a different light is shed upon certain of the exhibits. But, on the other hand, the documentary and physical evidence as a whole casts doubt upon the conflicting testimony and is only consistent with the facts as stated. There is a multitude of what in some circumstances might seem to be small conflicts between the documentary and physical evidence and the conflicting [3684] testimony which in sum amounts to serious discrepancy.

The conflicting testimony appears unreliable in some instances when compared with the documents and physical exhibits and in others when compared with the conduct of the parties, or both. In other instances, it appears unreliable because of internal conflict in the testimony itself or because it is inconsistent with prior statements in depositions or in conflict with plaintiff's answers to interrogatories. Some of the conflicts appear from the opinion where the position of plaintiff has been expressly rejected. Abundant examples are pointed to in the briefs of defendants.

More important from the standpoint of this memorandum of opinion than additional examples, because it could not be expressed by counsel, is the Court's expression of the witnesses from their demeanor and appearance as they testified at the trial.

Careful notes of almost one thousand pages were taken by the Court and they expressly reflect the Court's impression of the witnesses as they testified. Of all of the witnesses relied upon by plaintiff, Lloyd Rentsch is first in importance. Rentsch had charge of the patent program of plaintiff. He represented plaintiff in the

license negotiations with Kaiser and was the chief negotiator. He was a consulting geologist by profession and had little experience in the field of manufacturing cement.

On direct examination his testimony was well organized, direct and to the point. The direct examination on the subject of confidential disclosures commenced on [3685] November 15, 1963 in the afternoon and was concluded on the next Court day, which was November 20, before the morning recess. Cross-examination commenced and even before the morning recess was taken, the character of Rentsch's testimony changed. His confident summary of what had taken place at the license negotiation meetings of June 9, 1955 and July 5, 1955, which he had stated to be complete, commenced to be very materially expanded. The Court called this to the attention of the witness and urged him to try to exhaust his memory of these meetings in order to avoid an adverse impression on the Court. See the transcript, commencing on page 1786 and concluding on page 1788.

The witness' testimony became increasingly characterized by long pauses between the question and the answer. In the afternoon of the same day, the Court stated to the witness that the Court did not wish to keep the witness from thinking, but urged him to answer as promptly as he could. See page 1886 of the transcript. The witness sometimes adopted a very technical attitude toward the questions asked, making it difficult to proceed. An example may be found in the transcript, commencing at page 10396 to 10398. Another instance of the record indicating the long pauses of the witness appears at page 11338 to 11339, inclusive, of the transcript.

In addition to what the transcript reflects, the notes of the Court indicate from time to time that in the opinion of the Court the witness was being very evasive, that he was getting super technical and couldn't understand plain questions, and that he did not appear to be telling the truth. Later, when he was again being questioned by [3686] plaintiff's counsel, the Court noted, "Now that he is testifying for Pl., he has no hesitancy in his testimony—It all goes very smoothly."

Mr. Bechtold testified as an expert witness concerning the ex parte test of short longitudinal shims conpared with shims of the same design, but with shim to shell contact. The Court noted on two important occasions that the witness was evasive.

During the testimony of Mr. Johnson of Monolith, the Court noted that the witness was evasive and reluctant and on the spot because of the danger of jeopardizing his position. His memory was not good and he became confused as to sequence of events. He elaborated at other times, completely out of proportion to the lack of memory he exhibited on matters which appeared to be of equal import and likelihood to be retained on one's memory.

Mr. Paul Schoonover, Chief Engineer for Monolith Portland Cement, was also on the spot for the same reason Mr. Johnson was. The Court noted, "He simply doesn't remember anything. This seems incredible in view of the fact that he is one of the 4 or 5 men who run the company." The Court also noted that he seemed "to finally get a cue when the important question comes up."

Mr. O'Brien was the patent attorney employed by plaintiff to process the patent in suit. Ten separate notations were made in the notes of the Court to the effect that he made a bad impression as a witness, that his answers were evasive, that he was covering up to protect himself as much as the plaintiff, that he was not a reliable witness and on certain instances that his testimony at that point was not to be believed. [3687]

On the other hand, Mr. Bert Oberg, General Superintendent of Operations for Monolith and Laramie, earned the respect of the Court. He was also on the spot, so to speak. He was recalled on April 22, 1964 by plaintiff and answered two questions. First, he had an opinion that the short shims affected the production at Laramie and, second, that they increased the production by 100 barrels per day and doubled lining life over previous linings of all kinds. The Court believes that other evidence establishes that his opinion as to increased production is in error and that the extended lining life was possibly due to other improvements in operation and to the transverse orientation of the radial shims which have never been used by Kaiser.

To the extent that the testimony of plaintiff's witnesses is in conflict with this opinion, the conflict represents a lack of confidence in that testimony. It is not as reliable as the evidence opposed to it and the inferences to be drawn therefrom. It must be acknowledged that all of the important witnesses at this trial were subjected to the most careful and detailed direct and cross-examination by counsel from both sides. The examination was exhaustive, sometimes over done, but there were no instances of consequence, if any at all, where any witness was treated unfairly. In apprais-

ing the credibility of each witness, due consideration has been given to the strain to which he was subjected and his responsibilites to the respective parties, in addition to the usual elements which go into the appraisal of the worth of oral testimony. [3688]

The foregoing statement and analysis of the facts is a sufficient basis for determination of the factual issues of the first five counts of the complaint. As reflected in the pretrial statement, there are a number of claims included in several of the counts.

RESOLUTION OF FACTS IN TERMS OF THE PRETRIAL ORDER—COUNTS ONE THROUGH FIVE

Count One, Claim 1: The "certain valuable refractory processes, structures, articles and devices" conceived and developed by F. J. Anderson, which were communicated to defendants, all related to the radial shim development of plaintiff. None of these refractory processes, structures, or devices were ever employed by defendants, or any of them. No valuable information belonging to or originating with plaintiff was employed by defendants, or any of them, in the development of Kaiser's Unitab, or any of its predecessors in development. The only confidential relationship between plaintiff and defendants related to plaintiff's radial shim development. This confidential relationship was not violated by defendants, or any of them.

Count One, Claim 2: Plaintiff did not disclose the Anderson invention to defendants, or any of them, except the radial shim development of plaintiff. No false representations were made to plaintiff by defendants, or any of them, and to the extent that said

invention was disclosed by plaintiff to defendants in confidence, the confidence was kept by defendants, and each of them. None of the information disclosed by plaintiff to defendants, or any of them, was used to obtain the Davis patent. [3689]

Count One, Claim 3: Any teachings of the Anderson invention, or valuable information disclosed by plaintiff in confidence to defendants, or any of them, is not being used by defendants, or any of them, in competition with plaintiff. Defendants, and none of them, are unfairly competing with plaintiff by the use of the information and disclosures referred to above.

Count One, Claim 4: The conduct of defendants, and each of them, toward plaintiff does not constitute a variety of fraud of any kind and applicable statutes of limitation are not tolled on this account. The conduct of defendants which plaintiff relies upon as the gravamen of its claims against defendants, and each of them, with respect to which plaintiff claims that applicable statutes of limitation are tolled was disclosed by defendant to plaintiff and fully known by plaintiff on and after June 9, 1955.

Count Two: The Davis patent is not a patent upon an invention of plaintiff. The Davis patent does not incorporate information obtained from plaintiff.

Count Three: No disclosures made by plaintiff to defendants, or any of them, have been violated or employed in obtaining the Davis patent, nor is the Davis patent in suit. There is no occasion for declaratory relief.

Count Four: This count relies upon the same averments of fact as Count One. The factual determination of Count One is equally applicable to this Count,

No valuable information disclosed by plaintiff to defendants, or any of them, was disclosed to third parties. [3690]

Count Five, Claim 1—Express Contract in Writing, Part a: There was no express contract in writing between plaintiff and defendant Kaiser relative to the subject matter of this litigation and, specifically, to pay to plaintiff all or any of the profits of any sales which defendant Kaiser might make of Anderson shims to third party companies. The negotiations with respect to this subject were abortive and never ripened into agreement. At no time has defendant Kaiser furnished Anderson shim articles to its cement industry customers. The articles which plaintiff claims to be Anderson shim articles were independently developed by Kaiser.

Count Five, Claim 1—Express Contract in Writing, Part b: At the request of plaintiff and on plaintiff's order, defendant Kaiser manufactured and delivered to plaintiff certain radial shims. No feature, idea, or application of such shim has been appropriated by defendant Kaiser while or after filling plaintiff's order for such shims. Defendant Kaiser has not made or sold shims of their own equivalent to the shims ordered by plaintiff from defendant Kaiser. Short shims placed between bricks laid in rings in a cement kiln are not equivalent to radial short shims placed between rings of brick in the kiln. The only common feature of both shims is that each is installed in such a manner as to leave a space between the shim and the shell. Defendant Kaiser did not learn of the practice of leaving such space from plaintiff or ever agree with plaintiff in writing or otherwise that it would not man-

ufacture or sell shims designed to be installed in a cement kiln in such a manner as to leave a space between the shim [3691] and the shell. Plaintiff first became aware that defendant Kaiser had manufactured and sold such shims on June 9, 1955, knowing at that time that defendant Kaiser claimed to have developed such product independently of plaintiff and had no intention of paying plaintiff anything on account of the manufacture and sale of such articles.

Count Five, Claim 2—Oral Express Contract: No express oral contract came into existence between any of the parties on June 9, 1955, or upon any previous or subsequent date on the subject of plaintiff's technical information or trade secrets. The negotiations of the parties were abortive and there was never a meeting of the minds upon any part or all of the subject matter under discussion. Specifically, there was no express agreement to pay plaintiff for the use of what plaintiff has characterized as technical information or trade secrets or simply valuable information, either upon the basis of the reasonable value thereof, or otherwise. Whatever information not already known to defendants which was received from plaintiff by defendants was never utilized by them, or any of them.

Count Five, Claim 3—Implied in Fact Contract Part a: On June 9 and July 5, 1955, defendant Kaiser and plaintiff participated in negotiations with a view to entering into a written agreement of license to practice the patent which the parties anticipated would issue to Anderson and be assigned to plaintiff. Plaintiff disclosed to defendant Kaiser certain features of said impending patent, which features related to the Anderson concept of employing a radial shim between the rings

of brick in a [3692] cement kiln instead of shims between bricks in the ring of bricks in the kiln. The radial shim was to be positioned so as to leave a space between the shim and the kiln shell. Plaintiff also disclosed information which purported to reflect the performance characteristics of such kiln lining construction and its advantages over other types of kiln lining construction. Information on this subject, which was received by defendant Kaiser on or before said dates and during the course of such negotiations and not previously known to Kaiser, was received under circumstances from which it may be inferred that the parties intended that if defendant Kaiser used such information, it would pay the reasonable value of such use to plaintiff. None of the information so received by defendant Kaiser was ever used by defendant Kaiser and defendant Kaiser has never repudiated or violated such implied in fact contract.

Count Five, Claim 3—Implied in Fact Contract Part b: What has been said in reference to Part a is applicable to Part b. The date of February 1, 1956, is a date encompassed by the negotiations for license and the occurrences of said date which were disclosed by the evidence were a part of or collateral to such negotiations.

Count Five, Claim 4—Implied in Law Contract: The refractory articles which were sold to the general public by defendant Kaiser during the time mentioned in this claim, October-November, 1956, did not incorporate any element or elements of plaintiff's trade secrets when used for their designed purpose. The only feature of plaintiff's trade secrets or valuable information which plaintiff disclosed to or entrusted to de-

fendant Kaiser which is common both to the disclosures made by plaintiff to defendant Kaiser and the Kaiser refractory articles, which are the [3693] subject matter of plaintiff's complaint, is that in kiln linings constructed according to the information disclosed by plaintiff a space would be left between the shim and the shell. The fact that such a space could be left and that it inhibited the radiation of heat from the shell through the shims was already known to defendant Kaiser. Defendant Kaiser did not misappropriate any of plaintiff's trade secrets or information and did not become unjustly enriched by the sale of its refractory articles which utilize a shim which does not touch the kiln shell. Defendant Kaiser violated no trust. Furthermore, defendant Kaiser made no field trials of any product employing trade secrets or valuable information belonging to plaintiff. The use of defendant Kaiser's products by its customers, which use resulted in a kiln lining in which there was a space between the shim and the shell, were uses which resulted from sales of defendant Kaiser's products and were not field trials or experiments conducted on behalf of defendant Kaiser.

Count Five, Claim 5: The Davis to Schoonover letter of February 1, 1956, which is quoted in part on page 21 of the pretrial order, is a letter which refers exclusively to radial shims and is out of context to any other reference. It was written without ulterior motive and without secret intent and not with the intention of inducing a false sense of security in plaintiff. Plaintiff did not rely upon such statement or the letter as a whole as a disclaimer of adverse interest in short-shimmed articles used in lining cement rotary kilns. Plaintiff [3694] already knew as of June 9,

1955, that defendant Kaiser had developed such an article and had sold the same to one of its customers. Plaintiff knew that the letter was a disclaimer of adverse interest in radial shim use only and in the context of the letter, as a reply to one by Schoonover of Monolith, and in context with the surrounding relevant circumstances, plaintiff could not have reasonably relied upon the letter to have a broader application than herein stated. No fraud was practiced upon plaintiff by defendant Kaiser. No relation of trust and confidence existed between the parties, except with regard to plaintiff's radial shim practice which was disclosed to defendant Kaiser first as a supplier of the shims and subsequently in arms'-length license negotiations. Plaintiff concealed from Kaiser its intent to obtain a patent upon short shims for longitudinal placement to the kiln axis in the kiln as distinguished from the transverse positioning of the radial shim. The manufacture and sale of short-shimmed kiln liners by defendant Kaiser began in June, 1955, or before, and not in October of 1956, as averred by plaintiff and none of such sales constituted the unauthorized use of plaintiff's valuable property rights. [3695]

PATENT INFRINGEMENT COUNT

The Court now turns its attention to the sixth count for patent infringement.

The authorities indicate that should the patent be obviously invalid, this determination should be made in the public interest, even though the accused device does not infringe. *Patent Scaffolding Co. vs. Up-Right, Inc.*, 194 F. 2d 457 (9th Cir., 1952). A judgment of non-infringement and non-validity is accept-

able, but in no event should a judgment hold a patent valid, but not infringed. *Bergman vs. Aluminum Lock Shingle Corp. of America,* 251 F. 2d 801 (9th Cir., 1958); *Kemart Corp. vs. Printing Arts Research Laboratories, Inc.,* 201 F. 2d 624 (9th Cir., 1953); *Patent Scaffolding Co. vs. Up-Right, Inc., supra; Altvater vs. Freeman,* 319 U.S. 359, 363, 63 Sup. Ct. 1115, 1117, 87 L. ed. 1450 (1943).

Various routes have been followed in an effort to comply with what the Supreme Court has commended as the better practice in cases involving the issues of validity and infringement. The decisions which have resulted, taken together, suggest that where the public interest would be served by a determination that a patent is invalid, this issue should be inquired into fully as having the greater public importance. On the other hand, where there is no infringement and invalidity is not obvious, the public interest is better served by not adjudicating matters which are unnecessary to a decision which can rest more easily upon lack of infringement.

The public interest will be served by a declaration of invalidity if the patent is "obviously invalid." On the other hand, if it is not obviously invalid and such [3696] a determination involves the careful consideration of a conflicting evidence or presents a close question of law when all facts are considered, a determination of this question in face of lack of infringement of the patent is unnecessary. *Patent Scaffolding Co. vs. Up-Right, Inc., supra.*

The public interest will be best served in this case by inquiry into the validity of the patent claims in suit

because every purchaser of the Kaiser Unitab is a potential defendant in some other lawsuit as well as manufacturers and users of similar products made and sold by other refractory producers. Moreover, as will subsequently appear, the Court finds that the claims in suit are infringed if they are valid.

VALIDITY

The scope of the claims in suit (3, 4, 7 and 8) is such that the art to which the subject matter of the claims pertains or with which it is most clearly connected within the meaning of 35 U.S.C. §§ 103 and 112, embraces all refractory lined rotary kilns. Information concerning the construction and operation of refractory lined rotary kilns used for one purpose is applicable or closely analogous to such kilns used for other purposes.

The date of invention must be taken to be September 14, 1953. There is insufficient proof to establish an earlier date, but the purchase order for manufacture of radial shims for use at Laramie indicates a conception complete enough to put into practice. At the time of the Johnson-Putnam telephone conversation, Anderson's idea had not reached this stage and the evidence does not pinpoint any time between these two events when it did. [3697]

Refractory kiln linings which fall within the claims in suit were known and used prior to the date of Anderson's invention at the Mathieson plant, Saltville, Virginia, the Cape May, New Jersey, plant of Northwest Magnesite and at the Ideal Cement Company plant at Ada, Oklahoma. The defense to the proof concerning the foregoing consists of an assertion that defend-

ants have not met their burden of proof and that these uses were secret uses. Defendants have well sustained their burden of proof, measured by the various citations of authority tendered by plaintiff, and the evidence is convincing. Plaintiff's position regarding secrecy is that any use which is not a "public" use is a secret use. The term "public" is not used in the statute. There is no affirmative requirement that the use to which the statute refers be a "public" use in the sense that such use need be known to the general public or even the potentially interested segment of the public. A deliberate, intentional and high degree of secrecy must be maintained to establish that the use was secret. *Solo Cup Co. vs. Paper Machinery Corp.*, 144 U.S.P.Q. 729 (E.D. Wis., 1965); *Metallizing Engr. Co. vs. Kenyon Bearing & A.P. Co.*, 153 F. 2d 516 (2d Cir., 1946), Cert. den. 328 U.S. 840; *Gillman vs. Stern*, 114 F. 2d 28, 31 (2d Cir., 1940); *E. W. Bliss vs. Southern Can Co.*, 251 F. 903, 907-908 (Md., 1918), aff'd on opinion of District Court, 265 F. 1018 (4th Cir., 1920). A private use is not a public use any more than a secret use is a public use, but it is clear enough that a private use is not necessarily a secret use. The uses referred to were not secret uses.

Plaintiff argues that to constitute anticipation, the prior use must not only be structurally the same as [3698] that described in the patent claims in suit, but the purpose for which it was constructed must be the same and the results noted must be the same. This is an erroneous concept of the law. An inventor is granted a patent upon his device, not upon the purpose for its employment or upon the results of its use. When the result is a necessary consequence of a specific

structure which was deliberately intended, it makes no difference that the purpose of a prior use or the intended result was different from the purpose and intended result which a later inventor had in mind. The structure being the same and the results necessarily being the same, the earlier use anticipates the later patent and invalidates it. See *Celite Corp. vs. Dicalite Corp.*, 96 F. 2d 242 (9th Cir., 1938); *H. .K Regar & Sons vs. Scott & Williams,* 63 F. 2d 229 (2d Cir., 1933).

In this case it is argued that the anticipations only had in mind an attempt at a more insulated lining, while Anderson's conception included, in addition, an increase in production and longer lining life. It is difficult to understand how Anderson could have intended his invention to have increased production and at the same time find such an increase a surprising and unanticipated result. But aside from this, plaintiff argues that the anticipating uses mentioned above did not involve cement kilns and, therefore, the results noted by Anderson were not observed. However, Anderson's patent is not confined to cement kilns and the claims in suit read squarely on the uses mentioned. Therefore, no argument can be made that they are not anticipatory in that type of use. Nor can plaintiff now successfully urge that Anderson's invention is in a different art when by his [3699] own choice and definition of the relevant art Anderson included all refractory lined rotary kilns.

The evidence also shows that the claims in suit read upon a refractory article manufactured by General Refractories in 1940, if a kiln lining should be constructed of such articles. In 1948 perforated shims were used with basic brick at Southwestern Portland Ce-

ment Company. The claims in suit read upon such structures. Both of these uses were anticipatory uses.

A patent is invalid if the differences between the subject matter patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. See 35 U.S.C. §§ 103 and 102(e). The claims in suit are invalid because the subject matter as a whole would have been obvious from the prior art patents of Longacre, Heuer '141 and Wilkins.

Anderson's principal objectives were to combat high shell temperatures and to prevent longitudinal cracks in the lining which he reasoned might contribute to early lining failures. The surprisingly great increase in production and lining life claimed to have been the consequence of the invention were unexpected or unanticipated and it was so represented to the patent office. While Anderson had equated heat loss through the shell with loss of production rather than with increased fuel consumption, the evidence does not show that the two expressions refer to different conditions. Even the expression "loss of production" does not suggest that if the condition causing the loss were rectified an improvement in production would [3700] exceed the improvement which would be directly attributable to the heat saved. A more efficient kiln would result from the conservation of heat within the kiln and "kiln efficiency" is not an expression that connotes an increase in production in excess of what might be expected from the conservation of a small amount of heat.

Since the short shim in the ring does not contribute to the objective of elimination of longitudinal cracks,

or combating kiln ovality either, the function of the short shim in the ring is to reduce heat loss through radiation. With this objective in mind, any person ordinarily skilled in the art would learn from the prior art that a shim which did not touch the shell would accomplish the purpose. The means of constructing a short shim in the ring lining by bending a portion of the shim over the hot face of the brick to suspend it from contact with the shell would readily occur to any mechanic. The consequences of such construction in a cement kiln would occur and in fact could not be avoided. No patent can be validly granted for the recognition of such results, even though they be entirely unexpected. The structure having been made obvious by the prior art for the accomplishment of one undoubtable result, the fact that there may also be other necessary results which had not been foreseen is irrelevant.

The brick shape shown in the drawings of the Wilkins patent which most nearly resembles the type of brick used in a cement kiln would produce a small circle the size of a sewer pipe as argued by plaintiff. However, the modification of brick shapes to conform to the requirements of any given kiln diameter is an ordinary, everyday task of the refractory manufacturer. The shape shown in [3701] the drawings is, therefore, of no consequence and would be so recognized by a person ordinarily skilled in the relevant art.

The evidence clearly shows that the claims in suit are based upon new matter and are, therefore, not entitled to the earlier filing date of the original application. More than one year prior to the insertion of such new matter into the application, there were public uses of kilns constructed in the manner defined in the claims

in suit and there were public sales of the refractory products and steel shims necessary to construct such linings. The uses at Saltville, Cape May and Ada have already been discussed and they constitute such public uses as to invalidate the claims in suit. These public uses occurred more than one year prior to the date of filing the original application.

After filing the original application and more than one year before the insertion of the new matter there were other intervening public uses and sales. The intervening uses occurred at the cement plants of Riverside and Southwestern near Victorville, California. The basic brick with short shims used to construct linings such as described by the claims in suit were on sale at the same time and before. The claims in suit are therefore invalid because the invention was in public use or on sale in this country more than one year prior to the date of the application of the patent within the meaning of 35 U.S.C. § 102(b). *Tucker Aluminum Products, Inc. vs. Grossman,* 312 F. 2d 293 (9th Cir., 1963); *Magee vs. Coca-Cola Company,* 232 F. 2d 596, 600 (7th Cir., 1956); *King Gun Sight Company* [3702] *vs. Micro Sight Company,* 218 F. 2d 825 (9th Cir., 1955); *Rosaire vs. Baroid Sales Division,* 218 F. 2d 72, 75 (5th Cir., 1955); *Whiteman vs. Matthews,* 216 F. 2d 712 (9th Cir., 1954; *Bourne vs. Jones,* 207 F. 2d 173 (5th Cir., 1953), adopting opinion below, 114 F. Supp. 413, 419-420, cert. denied, 346 U.S. 897 (1953); *Electric Storage Battery Co. vs. Shimadzu,* 307 U.S. 5, 20 (1939).

Plaintiff contends that the uses referred to are not public uses, but were in fact either secret or experimental uses. Neither of these contentions can be sup-

ported by either the evidence or the law. The evidence clearly shows that all of the uses referred to were to produce a commercial product. There is no evidence of a deliberate effort to shroud the uses in secrecy. The uses were in each case in the ordinary course of business with no secrecy beyond normal factory security of the kind necessary to prevent accidents, thefts of physical property and to promote efficiency.

The Riverside and Southwestern installations are said by plaintiff to be experimental and to therefore come within an exception to Section 102(b). If the installations be experimental, they would be either Kaiser's experiment or the experiment of the users. Plaintiff contends that Kaiser was experimenting to determine whether it should go into production with short-shimmed articles or to aid plaintiff in the development of the invention. This has been alluded to in an earlier part of this Memorandum of Decision. The evidence does not support this view. Kaiser made regular sales of its product to Riverside and Southwestern for profit. It was interested in the performance of the linings, but this can be said of all linings [3703] composed of Kaiser refractories.

The first short shim linings used by these companies were being tried out to determine whether more should be construed in the same way. However, this is not an experiment to develop a machine or device or to test a concept of a machine or device for the purpose of proving or improving it. The experimental use doctrine applies to experiments conducted by the inventor to enable him to perfect his inventions before applying for a patent. The use or sale by third parties of what constitutes the claimed invention is not an experimental

use within the exception. *Bourne vs. Jones, supra.* In the sale of its refractories to Riverside and Southwestern, Kaiser was acting on its own behalf and not on behalf of plaintiff and at that time occupied no special relationship with plaintiff concerning the product in question. *Lorenz vs. Colgate-Palmolive-Peet Co.,* 167 F. 2d 423, 429-430 (3rd Cir., 1948).

From what has already been said, both in the first part of this memorandum and from what has been said about the invention having been anticipated and having been obvious from prior art patents, it is apparent that the essential element of invention is lacking. As has often been said, the public is entitled to benefit from such advances as normally flow from the application of ordinary skills of one in the trade to the existing fund of public knowledge, without granting special concessions. *Griffith Rubber Mills vs. Hoffar,* 313 F. 2d 1 (9th Cir., 1963). If the claims in suit describe an advance in the art, it is no more than the normal flow from the application of ordinary skills of one in the trade to the then existing fund of public knowledge. [3704]

The file history of the Anderson patent makes it abundantly clear that the Board of Appeals overruled the Examiner and granted the patent upon the representations that the invention resulted in an unexpected and surprising increase in production. The evidence in the case at bar establishes that these representations were false. No increase in production of any magnitude has been identified as due to the invention as delineated by the claims in suit. The structure defined by the claims in suit does not perform some function which is new and different from short shims which have been

used before or which have been described in the prior patent art. Cases in this Circuit point out that for a combination patent to be valid some new or different function or unusual or surprising consequences must result. *Kwikset Locks, Inc. vs. Hillgren,* 210 F. 2d 483 (9th Cir., 1954); *Photochart vs. Photo Patrol,* 189 F. 2d 625 (9th Cir., 1951).

As already pointed out, the commercial success of the Unitab is due principally to its convenience which is a composite of a number of features, most of which are not related to the invention described by the claims in suit. For this reason the commercial success argument which heavily influenced the Court in *Twentier's Research, Inc. vs. Hollister Incorporated,* 319 F. 2d 898 (9th Cir., 1963), is ineffective in the case at bar. The other significant point made in the last cited case was that the invention worked to produce the results claimed for it. The Anderson invention defined by the claims in suit has only been shown to work to the extent of reducing heat loss. It was not proved that kiln efficiency was improved except [3705] to the extent heat loss was reduced. It was not improved in the context in which plaintiff uses the term, "kiln efficiency." So from this standpoint, the feature which is supposed to distinguish it from the prior art, the invention did not work.

The claims in suit are unenforceable by reason of the fraud practiced on the Patent Office, consisting of: (a) deliberate concealment of statutory bars; (b) falsehoods in the petition to make special; (c) misrepresentations as to "unexpected results;" and (d) false statements of novelty in the Wicken affidavit. The Court has adopted the finding proposed by defendants

on the subject of fraud. Most of the subject matter referred to in the finding has already been discussed in great detail. Further repetition would serve no useful purpose.

Plaintiff urges the Court to view the alleged misrepresentations in the light of the knowledge of the parties at the time the representations were made. Undoubtedly, this is the only proper approach. When viewed in that light, and taken as a whole, they skirt the known truth. An acceptable explanation may be plausible when each small point is isolated from the others, but when the picture is viewed in its entirety, the fact that the Patent Office was not told the then known truth is inescapable.

The presumption of validity of the patent has been rebutted and it appears to the Court that the claims in suit are invalid for the reasons stated. [3706]

INFRINGEMENT

Turning now to the question of infringement, none of the defendants themselves ever employed the structure defined by the claims in suit. However, Kaiser manufactured certain accused devices and Kaiser and its agents on behalf of Kaiser and acting within the scope of their employment supplied information and instructions for the installation of its accused product in rotary kilns. When so installed, the resulting structure would infringe the claims in suit. Kaiser was therefore in the category of a contributory infringer. The individual defendants did nothing in their individual capacities which would put them in the same position as Kaiser. On this basis, the Court finds that the claims in suit were infringed by Kaiser, but that the

same claims are invalid for the reasons stated. The claims in suit were not infringed by the individual defendants in their individual capacities.

ATTORNEYS' FEES

This is an exceptional case within the meaning of 35 U.S.C. § 285 and reasonable attorneys' fees should be awarded to defendants. The plaintiff obtained its claims in suit through fraudulent representations to the Patent Office. The litigation was unduly and unnecessarily prolonged. Plaintiff was reluctant to disclose exactly what claims plaintiff intended the various counts of the complaint to embrace. Eleven days in open Court accounting for 927 pages of transcript, plus two days in chambers were required to arrive at a pretrial order. Even then the objective of pretrial, to reduce and pinpoint the [3707] issues was not accomplished due to plaintiff's apparent desire to maintain a maximum mobility. This attitude continued throughout the trial, making it difficult to understand the object of plaintiff's examination and to rule on objections or admissibility of evidence. This unduly prolonged the trial.

Plaintiff took extreme positions and adopted strained constructions which unduly prolonged the trial. A separate hearing on the amount of reasonable attorneys' fees to be awarded will be held and evidence will be admitted on this issue.

DATED: June 6, 1966.

/s/ ALBERT LEE STEPHENS, JR.
United States District Judge
Albert Lee Stephens, Jr. [3708]

Order Re Objections to Plaintiff's Interrogatories to Defendants Re Attorneys' Fees.

United States District Court, Central District of California.

Monolith Portland Midwest Company, a Nevada corporation, Plaintiff, vs. Kaiser Aluminum & Chemical Corporation, et al., Defendants. Civil No. 553-58-S.

Filed Oct. 17, 1966.

The above entitled case was decided in favor of defendants after a lengthy trial by memorandum dated June 7, 1966. The Court awarded attorneys' fees in favor of defendants leaving the question of the amount to be determined after a further hearing.

On July 15, 1966, defendants filed application for an order fixing the amount of attorneys' fees. The Court set August 8, 1966 as the date for hearing. On July 29, 1966, at the request of plaintiff's counsel, the hearing was continued to October 19, 1966.

On August 11, 1966, plaintiff associated new counsel and apparently charged said new counsel with responsibility for further proceedings. On August 18, 1966, a further hearing was had at which time the Court urged counsel for both sides to expedite the matter by informed [4510] cooperation in the production of documents relative to services of attorneys employed by defendants in the defense of the action. Pursuant to this request, a great volume of material was made available to counsel for plaintiff for inspection and copying and records of the time expended by attorneys employed by defendants were furnished to counsel for plaintiff.

On September 1, 1966, plaintiff served upon defendants 108 interrogatories, many of which were broken

down into numerous subdivisions. These were all preceded by a definition of terms further expanding the interrogatories. Plaintiff seeks a myriad of documents and a breakdown of the services rendered which is so elaborate that compliance would be virtually impossible and of little value to a decision of the issue. It is not customary for attorneys to keep records which would be subject to minute division and subdivision. The keeping of records in such detail would serve to increase the cost of legal services by requiring lawyers to spend as much time in record keeping as in productive work. The voluminous files in this case are themselves a source of most of the information essential to a determination of what the respective lawyers did at any particular time. Furthermore, the plaintiff's attorney who tried the case has first-hand knowledge of the posture of the case at any given time.

Duplication of effort is not entirely unavoidable. The greater the magnitude of the case, the more likely is the possibility of duplication, if for no other reason than the fact that more than one opinion on an important point may be prudent. The Court being intimately familiar with the case is in a position to recognize excesses of duplication of effort, if such there be. Moreover, the [4511] nature of legal research is such that many legal problems must be examined if only to produce assurance that they are not to be in issue. Lawyers are charged with the duty of exploring various avenues of defense, even if they lead to blind alleys.

It must be borne in mind that plaintiff's original counsel, who is still of record, filed this action and actively guided and took part in all of its phases and personally conducted the trial for plaintiff. He is ac-

quainted with the proceedings in sufficient detail to be able to identify the active participation of all lawyers who appeared and took part in the preparation and trial of the action and to be able to recognize what type of research and preparation was required from time to time. Plaintiff is therefore quite well informed in more than just a general way concerning the work which should have been required in defense and with the material already furnished by defendants can point with some particularity to duplication of effort or wasteful preparation by the various counsel of defendants. Interrogatories could therefore be directed with considerable particularity. However, even after the Court had suggested to plaintiff's counsel that the interrogatories might be modified to avoid the obvious burden which their present form imposes and to sharpen and particularize the inquiries, plaintiff's counsel refused to do so and insisted upon a ruling upon the objections to the interrogatories as they were presented notwithstanding the material received in the meanwhile from defendants and the opportunity to inspect and copy additional records of defendants.

In resolution of an issue such as here presented, it has always been recognized that the Judge is acquainted [4512] with the manner lawyers generally keep records, the legal work required to produce a given work product in Court, and generally the standards of legal compensation for attorneys of like standing in the community for cases of varying complexities and the results achieved. In this instance, the Judge was engaged in the general practice of law for twenty years before taking the bench and has served seven years on the bench. Taking these matters into consideration, the presentation need not include the details of evi-

dence which might be required for the presentation of a like case to a jury. Furthermore, the Judge also presided over the bulk of the discovery process and became familiar with the details of it all and sat through the lengthy trial of the case.

All of these considerations taken into account, defendants' objections are well taken as a whole. The interrogatories were untimely. They were and are oppressive and burdensome in the extreme. They demand information which has little probative value. The Court is not obliged to itself re-tailor interrogatories of this nature, especially since plaintiff has been invited to make revisions and refused after the Court outlined its views in open Court. The interrogatories are in some instances entirely irrelevant. Some obviously seek to relitigate subject matter already decided. Taken as a whole, they are irrelevant even though portions of the questions are relevant.

Considered in the light of these unduly protracted proceedings and the way that they have been conducted, the Court cannot escape the impression that they were submitted in large part for the purpose of accomplishing delay.

IT IS ORDERED that the objections of defendants be sustained to all of the interrogatories of the plaintiff [4513] except the following:

Interrogatories No. 49, 50, 51, 52, 65(a) and (c), 66(a)-(f), inclusive, 68, 70, 81, 82, 98 and 102.

DATED: October 10, 1966.

/s/ ALBERT LEE STEPHENS, JR.
United States District Judge [4514]

Supplemental Memorandum of Decision Re Attorneys' Fees.

United States District Court, Central District of California.

Monolith Portland Midwest Company, a Nevada corporation, Plaintiff, vs. Kaiser Aluminum Chemical Corporation, et al., Defendants. Civil No. 553-58-S.

Filed Jan. 6, 1967.

In the Court's Memorandum of Decision, the point was made that this is an exceptional case within the meaning of 35 U.S.C. §285 for the reasons stated in the memorandum. It is also an exceptional case from another point of view. The way the case was presented by the plaintiff from the discovery stage through the motion and pretrial stage and throughout the trial itself made it impossible to separately treat the evidence which was relevant and material to the patent count (Count Six) and its defenses from the evidence relevant and material to the other counts. While this creates unnecessary difficulty in consideration of the issue of allowable attorneys' fees, complete confusion is not a necessary result.

As may be observed from the pretrial order, it developed that plaintiff had in mind a greater variety of [4665] claims than was clearly evidenced by the various counts in the complaint. Four claims were read into Count One. Four claims were read into Count Five. It was stipulated that no evidence would be introduced in support of Counts Two and Three which would not also be admissible in support of Counts One, Four, Five and Six. The fourth count was based upon the evidence to be introduced in support of Count One

and was only separately stated to provide a different legal theory for damages. With this in mind, it is apparent that in the main the discovery and trial were concerned with evidence which could be produced in support of Counts One, Five and Six of the complaint plus whatever evidence might be material to the defenses to these counts.

Count One, Claim 1, is that Anderson conceived and developed certain valuable processes, structures, articles and devices, and disclosed this to defendants in confidence and that the confidence was broken. Count Six claims that Anderson obtained the patent in suit on what he conceived and that defendants infringed the patent. The largest part of the evidence material to Count One, Claim 1, was also material to Count Six or its defenses. This is especially true of evidence concerning the originality of the conception and whether it was useful. Claim 2 of the same count is that defendants solicited disclosure of Anderson's invention in confidence and then published it. The fact of publication is the foundation for the claim of contributory infringement. Claim 3 of the same count is that defendants are unfairly competing with plaintiff by using the confidentially disclosed teachings of Anderson and his patent application. This was more a legal argument than a basis for introduction of evidence. The fourth claim of Count One is that all statutes of limitation are tolled by the fraud [4666] of defendants. It is too plain to belabor that most of the evidence material to each of the claims of plaintiff's first count is also material to the sixth count (patent count) or defenses to it.

The fifth count claims an express written contract, and express oral contract, a contract implied in fact and a contract implied in law, all to the same effect. In an exploration of the issues of invention, the defendant and industry's independent knowledge of the subject matter of the patent, the relevant prior art, and industry practices in this field of knowledge are pertinent. The materiality of such evidence to the patent count is obvious and this same evidence helped to place the various writings and conduct of the parties in context which was essential to claims of express and implied contracts.

What has been said above merely touches the surface of the intertwining of issues in this action. The bulk of the evidence was material to the patent count or the defenses to it, even though some of it was also produced and admitted for its probative value concerning other issues. The issues should have been clarified, simplified and reduced, but all efforts to accomplish this objective were frustrated. Had all but the patent cause of action been eliminated. it seems likely that the same amount of attorneys' time would have been consumed. There was a smoldering heat and hostility surrounding the litigation and no hope of a short trial.

Notwithstanding what has just been said, there is an area wherein the defendants employed attorneys' services, the reasonable value of which should not be assessed against [4667] plaintiff. Suit was not initiated in bad faith and it had to be defended. The defense against the patent count would not have required all of the legal services which were actually rendered. While the manner of preparation and presen-

tation of the case makes it impossible to point to particular days or particular hours which fall in one category or the other so that a mathematical division of the expenditure of time can be computed, a rational decision on the issue is not precluded. Reasonable attorneys' fees need not be based wholly upon the hours expended. This is one factor of major importance but the number of hours expended might be heavily discounted in some situations. The inability to segregate specific hours to certain purposes does not render an award of attorneys' fees invalid as speculative. In the final analysis a decision as to a sum which will represent reasonable compensation rests in the exercise of sound judgment in the light of professional experience, custom and opinion.

The difficulties encountered in resolving the question of reasonable attorneys' fees do not render the resolution conjectural. A sound principle applied in the award of damages is that one is not permitted to escape his liability simply by reason of the difficulty in ascertainment of the amount. A decision must be reached with as great a degree of certainty as the circumstances permit. No more can be expected and one who has caused uncertainty to exist or has by his own acts contributed to it should not escape liability on that account. There is no reason why the same principles should not apply with equal logic and force to the ascertainment of reasonable attorneys' fees. Reasonable attorneys' fees for services rendered in defense of this case are ascertainable by [4668] accepted standards for legal compensation.

In a case of this magnitude. it is only prudent for more than one lawyer to be employed both for the sake

of continuity in case of illness or accident and in the interests of dispatch. The testimony shows that the lawyers employed by defendants did their best to avoid duplication of effort and waste of time. The Court should and has taken into consideration the presence of more than one attorney at a given time, deposition, hearing or trial day. The extent that this has constituted duplication of effort has been weighed. Some other forms of duplication of effort are evident. The award takes this into consideration and excludes compensation for attorneys' services which duplicate the services of others.

There is authority for the proposition that the Court may award attorneys' fees as costs in non-patent claims when such claims are unconscionable, the equivalent of fraud, in bad faith or solely for purposes of vexation and harassment. *Sprague vs. Ticonic National Bank,* 307 U.S. 161, 59 Sup. Ct. 777, 83 L.ed. 1184 (1939); *Local No. 149 International Union vs. American Brake Shoe Co.,* 298 F. 2d 212 (4th Cir., 1962); *Rolax vs. Atlantic Coast R. Co.,* 186 F. 2d 473 (4th Cir., 1951); *Carter Products, Inc. vs. Colgate-Palmolive Company,* 214 F. Supp. 383 (D.C. Md., 1963), When the original complaint was filed, it contained no patent cause of action and it was not filed in bad faith, but there came a time when the principles which lead to the award of attorneys' fees in the cited cases applied to the further maintenance of this action. A recognition of this situation should have occurred to the plaintiff and counsel long before it could have become apparent to the Court. An award of attorneys' fees in this case could be based upon [4669] this authority. Rule 37(c) also provides a basis for awarding

attorneys' fees and this rule would be applicable in certain instances in this case.

The amount of an award of attorneys' fees is addressed to the sound discretion of the Court whether the award stems from the general equity power of the Court or the provisions of statute. Even though it would seem that the exercise of general equity power is broader than the authorization of 35 U.S.C. §285, because it is not limited to patent cases, this power should be used sparingly and cautiously. The award made in this case is within the authority of the statute, consistent with its purpose and, at the same time, is in an amount which should be awarded in the exercise of sound discretion to prevent injustice under the Court's general equity power.

All of the peculiar factors of this case having been fully and carefully considered and all of the elements which enter into the fixing of reasonable attorneys' fees having been carefully weighed, the Court finds that the sum of $280,000.00 should be awarded to defendants as reasonable attorneys' fees to which the defendants as the prevailing parties are entitled.

DATED: January 5, 1967.

/s/ Albert Lee Stephens, Jr.
United States District Judge [4670]

Findings of Fact

[R 3709 to R 3757]

Introductory Note: The revised Findings of Fact filed on January 6, 1966, are set forth below. Following most of the controlling findings, we have included annotation to portions of the Memorandum of Decision and Pre-Trial Order underlying such findings; to compilations of, and comments on the pertinent evidence in Defendants' prior briefs; and, in a few instances, directly to the evidence. Limitations of time and space make it impracticable to list all testimony bearing on each finding. Most of the controlling findings were the subject of testimony of several witnesses or testimony at widely separated points in the transcript, or both. Omission of all or any such annotation is not to be deemed an admission that any finding lacks substantial supporting evidence or is in any respect, erroneous.

For the location in the Reporter's Transcript of the respective testimony of the some 40 witnesses who testified, either in person or by deposition, reference may be had to the MASTER INDEX Tr. ii through v.

The letter 'R" refers to the Record on Appeal, "SR" to the Supplement to the Record on Appeal dated August 11, 1967, "Tr." to the Reporter's Transcript of Proceedings, and "Exh." to exhibit.

Findings of Fact and Conclusions of Law.

In the United States District Court, Southern District of California, Central Division.

Monolith Portland Midwest Company, a Nevada Corporation, Plaintiff, vs. Kaiser Aluminum & Chemical Corporation, et al., Defendants. Civil Action No. 553-58-S.

Lodged: July 15, 1966.

Filed: Jan. 6, 1967.

PARTIES

1. Plaintiff, Monolith Portland Midwest Company, is a Nevada corporation in the business of manufacturing Portland Cement and is a citizen of Nevada.

Annotation, Finding 1: Pre-Trial Order, SR 35; Memorandum of Decision, R 3561

2. Plaintiff owns and operates a cement plant in Laramie, Wyoming and has its executive offices in Los Angeles, California.

Annotation, Finding 2: Pre-Trial Order, SR 35; Memorandum of Decision, R 3561

3. Monolith Portland Cement Company [hereinafter called "Monolith"], which owns all of Plaintiff's common stock, owns and operates a cement plant in the Tehachapi Valley at Monolith, California and has its executive offices in Los Angeles, California. [R 3709]

Annotation, Finding 3: Pre-Trial Order, SR 35; Memorandum of Decision, R 3561

4. Plaintiff and Monolith are joint venturers with respect to exploitation of the alleged Anderson invention assigned to Plaintiff and which is the subject of this action.

Annotation, Finding 4: Pre-Trial Order, SR 35; Memorandum of Decision, R 3561, 3569

5. Defendant, Kaiser Aluminum & Chemical Corporation is a Delaware corporation; Defendant Kaiser Aluminum & Chemical Sales, Inc. is a California corporation and said Defendants are citizens of Delaware and California respectively.

Annotation, Finding 5: Pre-Trial Order, SR 35; Memorandum of Decision, R 3561

6. Defendant Kaiser Aluminum & Chemical Corporation manufactures at its Moss Landing, California plant refractory bricks which its affiliate, Kaiser Aluminum & Chemical Sales, Inc. sells to industry users [these Kaiser companies are hereinafter jointly referred to as "Kaiser"].

Annotation, Finding 6: Pre-Trial Order, SR 37; Memorandum of Decision, R 3593

7. On June 6, 1958, the filing date of the original complaint herein, Defendants George C. Davis and Palmer Ford were residents and citizens of California, and Defendant Pete Olive was a resident and citizen of Washington, and all were employed by Kaiser.

Annotation, Finding 7: Pre-Trial Order, SR 35; Memorandum of Decision, R 3561

JURISDICTION

8. The Court has jurisdiction over the parties with the exception of Defendant Pete Olive.

Annotation, Finding 8: Pre-Trial Order, SR 35-36

9. Defendant Pete Olive was never served with process and has never answered or formally pleaded herein, and has not submitted to the jurisdiction of this Court and he was dismissed from the action by the pre-trial order.

Annotation, Finding 9: Pre-Trial Order, SR 36; Memorandum of Decision, R 3561

10. Plaintiff's First Amended and Supplemental Complaint [hereinafter referred to as "the complaint"] contains six counts. In the first five counts, Plaintiff claims a right to damages, [3710] declaratory relief and compensation from Defendants upon several legal theories, with chief reliance upon the theory that Plaintiff is entitled to damages for breach of confidence. The Sixth count is for infringement of Plaintiff's United States Letters Patent No. 2,895,725 and seeks damages and injunctive relief.

Annotation, Finding 10: Memorandum of Decision, R 3562

11. Jurisdiction as to the first five counts was invoked and exists on the ground of diversity of citizenship and an amount in controversy, exclusive of interest and costs, of more than $3,000.00. [This action was filed prior to the effective date of 38 U.S.C. 1332(b) as amended].

Annotation, Finding 11: Pre-Trial Order, SR 34; Memorandum of Decision, R 3560-3561

12. The court finds that the amount in controversy, exclusive of interest and costs, actually has, at all times, exceeded $10,000.00.

Annotation, Finding 12: Pre-Trial Order, SR 37-39; Memorandum of Decision, R 3561

13. Jurisdiction as to the Sixth count is invoked and exists under 35 U.S.C. 1338.

Annotation, Finding 13: Pre-Trial Order, SR 34; Memorandum of Decision, R 3561

THE CONTROVERSY

14. This controversy is primarily concerned with the use of what the parties have termed "short shims" or "spacing" in rotary kilns lined with "basic" refractory bricks.

Annotation, Finding 14: Pre-Trial Order, SR 39-41, 65-66; Memorandum of Decision, R 3670

15. "Basic" brick, so-called because of its chemical characteristics, is a relatively recent development having relatively higher refractoryness than earlier used "acid", e.g., alumina bricks. Although superior to acid bricks in "refractoryness" (resistance to abrasion and exposure to high temperature) "basic" bricks are slightly higher in heat conductivity and thus somewhat less insulative than acid brick. [R 3711]

Annotation, Finding 15: Memorandum of Decision, R 3581-3582; Exh BX

16. In the usual industry practice now and prior to the Plaintiff's invention hereinafter described, the tubular steel shell of a rotary kiln is lined with successive rings of keystone shaped refractory bricks. When

"basic" as opposed to "acid" brick is used, metal plates or "shims" are conventionally placed between adjacent bricks in each ring. When the kiln is heated, these shims are partially oxidized and fused to help retain the brick lining in place. With conventional placement of shims in such a kiln, the shims are parallel to the axis of the kiln and are usually referred to as longitudinal shims.

Annotation, Finding 16: Memorandum of Decision, R 3583-3585, 3622; Exh BX

17. Shims which are positioned at right angles to the axis of the kiln, i.e., between the rings of brick, are variously referred to as radial, circumferential, circular, transverse, arcuate or segmental. Such shims are hereinafter referred to as "radial" shims. All these expressions refer to a steel plate shaped to fit the curved cross-section of the kiln and wide enough to extend from the hot face of the brick to the shell or a part of such distance.

Annotation, Finding 17: Memorandum of Decision, R 3622

18. "Spacing" in the context of refractory brick lining practice and as used herein means the practice of so placing and supporting the metal shims or plates between the bricks in such a lining, that all, or a substantial part of the plate is spaced from, i.e., out of contact with the metal shell or other support against which the bricks are installed and rest.

Annotation, Finding 18: Pre-Trial Order, SR 65

19. "Short shim" in the context of refractory brick lining practice and as used herein means a metal plate

or shim used between bricks in refractory lining designed and/or installed in such a way as to provide "spacing". [R 3712]

Annotation, Finding 19: Pre-Trial Order, SR 65-66

20. Among its other products, Kaiser manufactures and sells refractory products used to line the inside of steel-shelled rotary kilns. One such product is now sold under the trademark "UNITAB". The UNITAB liner is a conventional keystone shaped basic refractory brick with a piece of cardboard glued to one end and an L-shaped steel plate covering part of the top (the hot face; the surface exposed to the kiln interior) of the brick and extending down one side usually to within a half-inch of the bottom of the brick, i.e., the cold face, the brick face which rests against the shell. The L-plate or shim is glued onto the brick in "longitudinal" orientation and, when it does not extend down to the bottom of the brick, it is called a "short shim".

Annotation, Finding 20: Pre-Trial Order, SR 66-67

21. The UNITAB liner above described has been sold by Kaiser and in commercial use since early 1955, although the trademark was not adopted until some time after such sale and commercial use.

Annotation, Finding 21: Pre-Trial Order, SR 66, 75-87; Defendants' Post-Trial Brief, R 3119/76-77

22. United States Patent No. 2,829,877 issued on April 8, 1958 to Defendant Kaiser Aluminum & Chemical Corporation on an invention of Defendant George C. Davis entitled "Refractory", and such patent is a

file wrapper reference in the patent in suit. The structure of Defendant Kaiser's UNITAB liner is disclosed in the Davis patent.

23. Plaintiff's claims in all counts of the complaint are based on an alleged invention in September 1953 by Plaintiff's employee-assignor F. J. Anderson. One feature of the alleged Anderson invention involves the "spacing" of certain inter-brick metal plates or shims from the shell in a refractory lining of a steel-shelled kiln.

Annotation, Finding 23: Pre-Trial Order, SR 39; Memorandum of Decision, R 3697

24. Anderson's alleged invention was conceived and first reduced to practice in Laramie, Wyoming as a radial shim only and was not embodied by Plaintiff in any other form or in any longitudinal shim until a single experimental installation in February 1956, [R 3713] i.e., after the Kaiser UNITAB construction had, to Plaintiff's knowledge, been in commercial use for nearly a year.

Annotation, Finding 24: Pre-Trial Order, SR 42, 69-71; Memorandum of Decision, R 3624

25. Approximately a year after the Anderson invention was first actually reduced to practice, Plaintiff caused to be prepared, and on February 5, 1955, filed a patent application covering the Anderson invention and entitled "Rotary Kiln Construction". The initial Anderson application was succeeded by a Continuation-in-Part application filed December 26, 1956, which issued as Patent No. 2,895,725 on July 21, 1959.

Annotation, Finding 25: R 1895 through 2280

26. The evidence presented herein on the subject of how the January 1954 lining of Plaintiff's kiln in Laramie was installed was conflicting but indicates that a portion of the kiln was lined with radial short shims. This was the first short shim lining actually installed by Plaintiff or its parent company, Monolith.

Annotation, Finding 26: Memorandum of Decision, R 3624, 3631-3632

27. On August 27, 1953, some months prior to the first construction or use of the alleged Anderson invention, Alan Johnson, who was then Assistant Superintendent of Monolith telephoned Jack Putnam of Kaiser and asked Kaiser's opinion concerning certain kiln lining practices contemplated by Plaintiff in its Laramie kiln. (See Findings 32 through 36 *ante*). Radial shims were not mentioned during that discussion, nor were bent shims such as incorporated in the UNITAB construction mentioned.

Annotation, Finding 27: Memorandum of Decision, R 3603 through 3617; Defendants' Post-Trial Brief, R 3119/21-23, 3119/175-177

28. Information given to Kaiser and its agents by Plaintiff and its agents concerning the January 1954 Laramie lining was vague, conflicting and in some respects false. As a result, Kaiser misunderstood the nature of the January 1954 lining and this misunderstanding existed until at least September 1954. Consequently, whatever in [R 3714] formation Kaiser received from the time of the Johnson-Putnam telephone call on August 27, 1953, until at least September 1954

was too confused to be understood and was of no value to it.

Annotation, Finding 28: Memorandum of Decision, R 3631-3632; Defendants' Brief on Motion, SR 150/22-28; Defendants' Post-Trial Brief, 3119/22-24

29. The information received by Kaiser from Plaintiff from the time of the Johnson-Putnam telephone call in August 1953 at least to June 9, 1955, and probably for a period of time thereafter, concerning the January 1954 Laramie lining related exclusively to radial shims.

Annotation, Finding 29: Memorandum of Decision, R 3633; Defendants' Brief on Motion, SR 150/22-28

30. The facts that a space could be left between shims and the shell of a rotary kiln, that such space inhibited the radiation of heat to the shell through the shims and that such radiation was usually undesirable were all known to Defendant Kaiser prior to early 1953 and prior to any communication of such information to it by Plaintiff.

Annotation, Finding 30: Memorandum of Decision, R 3594-3595, 3609-3612

31. Included in the prior knowledge of Kaiser on the subject was that gained by its engineers who had in connection with Kaiser's own developments and as early as 1944 studied U. S. Patents No. 2,230,141 to Heuer and No. 2,230,142 to Longacre both of which clearly disclose the use of short shims and describe the reduction of heat loss achieved thereby. Also, prior to

March 27, 1953, Kaiser's full time employee and registered Patent Agent, Miss Lloyd, studied the above-identified Heuer and Longacre patents during preparation of Kaiser's Wilkins application which, in turn, discloses attached shims which cover only a portion of the side face of the brick. (See Wilkins Patent No. 2,915,893 issued to Kaiser on December 8, 1959). [R 3715]

Annotation, Finding 31: Memorandum of Decision, R 3594-3595, 3609-3612; Defendants' Brief on Motion SR 150/37-49; Defendants' Post-Trial Brief, R 3119/11-14

32. The testimony of Johnson concerning the Johnson-Putnam telephone call (See Finding 37) is, in part, in conflict with a contemporaneous memorandum thereof made by Putnam (Exhibit 106). Johnson was an unreliable witness and such conflicting testimony is overborne by the rest of the available evidence on this subject. The Putnam memorandum is reliable and constitutes a complete record of all material subject matter discussed in said conversation.

Annotation, Finding 32: Memorandum of Decision, R 3603, 3606, 3687; Defendants' Brief on Motion, SR 150/99-102; Defendants' Post-Trial Brief, R 3119/21-23; 3119/174-177

33. In light of the knowledge already possessed by Kaiser, the Johnson-Putnam telephone call did not constitute a disclosure to Kaiser of either a trade secret of Plaintiff or of any valuable information possessed

by Plaintiff which was unknown to Kaiser at the time.

Annotation, Finding 33: Memorandum of Decision, R 3616-3617; Defendants' Brief on Motion, SR 150/37-49; Defendants' Post-Trial Brief, R 3119/11-17

34. It is well established by the overwhelming weight of evidence that commencing prior to the Johnson-Putnam telephone call and at all times during the relationship between the parties that is the subject of this litigation, Kaiser had a policy of free exchange between itself and all of its customers of information which could lead to the improvement of refractories including rotary kiln linings. Plaintiff was well acquainted with this policy and took advantage of it. At no time prior to June 9, 1955 did Plaintiff disaffirm Kaiser's free exchange policy and practice and prior to said date Plaintiff never indicated in any way that any particular communication or prospective communication was to be regarded or treated any differently.

Annotation, Finding 34: Memorandum of Decision, R 3618-3619; Defendants' Brief on Motion, SR 150/60-71; Oberg testimony: Tr. 2972 through 2976

35. There was nothing about the Johnson-Putnam telephone call which expressly or impliedly indicated that the conversation was to be considered confidential or that Kaiser was not expected to use and freely publish and disclose any information discussed therein

[R 3716] for any purpose it saw fit and for the benefit of itself and any and all of its customers.

Annotation, Finding 35: Memorandum of Decision, R 3620, 3679; Defendants' Brief on Motion, SR 150/60-61; Defendants' Post-Trial Brief, R 3119 /22; Johnson testimony Tr. 8363

36. In view of Kaiser's policy described in Finding 34, the Johnson-Putnam telephone conversation was not by reason of the surrounding circumstances, confidential in nature and, in any event, was not stated, believed or assumed by Johnson to be such.

Annotation, Finding 36: Memorandum of Decision, R 3618-3621; Defendants' Brief on Motion, SR 150/60-65; Defendants' Post-Trial Brief, R 3119 /22

PLAINTIFF'S COMMUNICATIONS RELATED TO RADIAL SHIMS

37. Any of what Plaintiff denominates its "certain valuable refractory processes, structures, articles and devices" conceived and developed by F. J. Anderson which were communicated to Defendants related exclusively to the radial shim development of Plaintiff.

Annotation, Finding 37: Memorandum of Decision, R 3689

38. At the request of Plaintiff and on Plaintiff's order, Kaiser manufactured and delivered to Plaintiff certain radial shims. No feature, idea or application of such shim was ever appropriated by Kaiser while, or after filling Plaintiff's order for such shims. Kaiser has not made or sold shims of its own which are sim-

ilar or equivalent to the shims ordered by Plaintiff from Kaiser.

Annotation, Finding 38: Memorandum of Decision, R 3691

PLAINTIFF'S KNOWLEDGE OF KAISER'S SHORT SHIMS

39. At least as early as June 9, 1955, Plaintiff became aware that Kaiser had, prior to that date, manufactured and sold longitudinal short shims installed between basic bricks in a cement kiln and Plaintiff was informed on that date that Kaiser had developed such product independently of Plaintiff, was then engaged in the commercial sale thereof, and had no intention of paying Plaintiff anything on account of such manufacture or sale. (See Findings 40 through 50, 59 and 60 *ante*). [R 3717]

Annotation, Finding 39: Memorandum of Decision, R 3648-3650, 3681;

Defendants' Brief on Motion, SR 150/82-93; Defendants' Post-Trial Brief, R 3119/33-35, 3119 /92

THE LICENSE NEGOTIATIONS

40. On June 9, 1955, F. J. Anderson and Lloyd Rentsch, representing Plaintiff, and Palmer Ford and C. E. Miller, representing Kaiser, met to discuss the possibility of licensing Kaiser to practice the Anderson invention. This was the first meeting or communication between the parties on the subject of a possible license. Rentsch, who wanted to sell Kaiser on the idea

of taking a license, was the principal moving party in arranging the meeting.

Annotation, Finding 40: Memorandum of Decision, R 3646-3647; Exh. GK; Rentsch testimony Tr 1580; Ford testimony TR 9872 through 9882; Miller testimony Tr 10092-10106*

41. It is concluded from all the evidence on the subject that nothing was said at the June 9, 1955 meeting about the meeting being confidential or about longitudinal short shims being a part of the Anderson invention or being claimed as a concept of the Plaintiff or being any part of Anderson's then pending patent application.

Annotation, Finding 41: Memorandum of Decision, R 3648; Defendants' Brief on Motion, SR 150/60-71; Defendants' Post-Trial Brief, R 3119/24-26

42. Commencing with the meeting on June 9, 1955 and continuing with a second meeting on July 5, 1955, Kaiser and Plaintiff continued for a time to participate in certain abortive negotiations with a view to entering into a written license agreement under a patent which the parties anticipated would issue on Anderson's then pending application assigned to Plaintiff. No such agreement was ever reached. During the negotiations, Plaintiff disclosed to Kaiser some, but not all of the features that were included in said pending application. The only application features disclosed related to the Anderson concept of employing a radial shim between the rings of brick in a cement kiln in-

*Tr. 10093 line 10, read—the summer—for "December" see Tr 10115 and 10117.

stead of conventional longitudinal shims between bricks within the ring of bricks. It was disclosed that the "Anderson Shim", i.e., a radial shim as Defendants understood the term, was to be positioned so as to leave a space between the shim and the kiln shell. Nothing was disclosed during said negotiations concerning any longitudinal shims being an "Anderson Shim" or a part, or feature, of said pending application. [R 3718]

Annotation, Finding 42: Memorandum of Decision, R 3646-3669, 3692; Defendants' Post-Trial Brief, R 3119/31-32

43. During said license negotiation meetings in June and July of 1955, Plaintiff further disclosed information which purported to reflect the performance characteristics and relative advantages of kiln lining construction using radial "Anderson Shims". Such information on this subject as was received by Kaiser on or before said dates and during the course of such negotiations and was not previously known to Kaiser related to radial shims only and was received under circumstances from which it could be inferred that the parties intended that if Kaiser used such radial shim information, it would pay the reasonable value of such use to Plaintiff, thus giving rise to an implied-in-fact contract. However, none of the information so received by Kaiser was ever used by Kaiser and Kaiser has never repudiated or violated such implied-in-fact contract.

Annotation, Finding 43: Memorandum of Decision, R 3692-3693

44. It is established by a heavy preponderance of the evidence that any improvement in kiln productivity

during the life of the lining installed in Plaintiff's Laramie kiln in January 1954 was due primarily to several causes in addition to, and independent of, the radial short shims. Anderson knew this on June 9, 1955, and also knew on that date that he did not know what part, if any, of the improvement was due to the radial shims. But at the license negotiation meetings, it was falsely represented to Defendants by Plaintiff's representatives that the improvement was entirely due to the radial short shims in the lining and the other causes were not mentioned. Both Rentsch and Anderson knew that they did not possess either the knowledge or information required to make the representations they made.

Annotation, Finding 44: Memorandum of Decision, R 3640-3645, 3680-3681; Defendants' Brief on Motion, SR 150/33-35; Defendants' Post-Trial Brief, R 3119/109-121; Exh. G.

45. By April of 1956, Plaintiff's agents had made a further analysis of the Laramie kiln productivity and had determined that the radial shim lining contributed only a relatively minor part of the kiln productivity increase after the January 1954 lining, [R 3719] i.e., 19 out of 351 bbls. per day increase. Anderson knew of, and concurred in, this analysis, reporting the same in a paper submitted by him entitled "Use of Circular Steel Shims with Basic Brick Linings in Kiln of Monolith Portland Midwest Company at Laramie, Wyoming" (Exhibit AU).

Annotation, Finding 45: Memorandum of Decision, R 3644-3645; Defendants' Brief on Motion, SR 150/33-34; Defendants' Post-Trial Brief, R 3119 /113-114

46. The effect of a longitudinal short shim was not established by the Laramie lining. Any saving in radiation heat loss due to the January 1954 installation may be related peculiarly to the radial posture of the shims as compared to the longitudinal alignment of conventional shims within the ring. Because of the conventional brick shape and irrespective of whether or not spacing is employed, only about one-half as much metal is used in radial shim installations as in longitudinal shim installations.

Annotation, Finding 46: Memorandum of Decision, R 3633-3634; Defendants' Brief on Motion, SR 150/34-35

47. The second license negotiation meeting on July 5, 1955, was attended by Rentsch and Russell, a Vice-President of Monolith, for Plaintiff, and by Davis and Ford for Kaiser. The July 5 meeting was not confidential and was not stated by the parties to be confidential.

Annotation, Finding 47: Memorandum of Decision, R 3651-3654; Defendants' Post-Trial Brief, R 3119/24-26

48. As was the case on June 9, 1955 and notwithstanding the advice given Plaintiff as set forth in Finding 39, it was not disclosed to Kaiser at the July 5, 1955 meeting, that the Anderson patent application covered or was intended to cover longitudinal short shims. It is clear that nothing said by Plaintiff's representatives was understood by Kaiser to mean that the "Anderson Shim" or "Anderson Device" they were discussing was anything other than a radial shim.

Annotation, Finding 48: Memorandum of Decision, R 3653-3659, 3677-3678

49. There is no question but that after both license negotiation meetings, Kaiser understood that the "Anderson Shim", [R 3720] which was the subject of the pending patent application and the subject of all of the discussions and information received by Kaiser, was a radial shim and nothing else.

Annotation, Finding 49: Memorandum of Decision, R 3653-3659, 3677-3678; Defendants' Post-Trial Brief R 3119/101-103

50. Rentsch testified that to his knowledge the Anderson patent application was never shown to any Defendant and there is no evidence that at any time during the abortive license negotiation any part of the Anderson application was exhibited or described to Defendants or any of them, nor is there any evidence that any Defendant ever saw such application or knew what was in it until after the patent in suit issued.

Annotation, Finding 50: Memorandum of Decision, R 3651, 3681; Rentsch testimony Tr 10873

KAISER'S DEVELOPMENT OF UNITAB LINER

51. Before the commencement of the abortive license negotiations between Plaintiff and Kaiser in June, 1955, Kaiser had employed a well known elementary principle of physics, applied in an obvious mechanical manner, resulting in a short shim which it glued to its own refractory articles to form a short shim and brick unit (the UNITAB kiln liner) which it sold to its customers. This unitary kiln liner and every element or possible combination of elements therein was derived solely from Kaiser's own knowledge which it had prior to any disclosures from Plaintiff

or which was acquired prior to such disclosures from sources other than Plaintiff.

Annotation, Finding 51: Memorandum of Decision, R 3639-3640; Defendants' Brief on Motion, SR 150/82-92; Defendants' Post-Trial Brief, R 3119/16-17, 3119/33-35, 3119/76-77

52. The commercial success of the UNITAB can be attributed to a unique combination which supplies in a single unit several essentials of hot zone kiln construction. The commercial success of the UNITAB lies more in its convenient unitary character than in the fact that the shim is short of the shell. It is an article which was developed to meet competition and the demands of Kaiser's customers. Kaiser's advertising of this article does not rely more upon the short shim than upon its other features. In fact, the [R 3721] reverse is true. The commercial success of the UNITAB does not establish the claims of Plaintiff.

Annotation, Finding 52: Memorandum of Decision, R 3675-3676; Defendants' Post-Trial Brief, R 3383-3384

53. In June 1954, before Kaiser knew that Plaintiff's January 1954 Laramie installation was short-shimmed, Petersen of Kaiser reported a proposed installation by Ideal Cement Company at Denver, Colorado, of a hot zone lining using a legged or notched shim to space it away from the shell at least one-half inch or more.

Annotation, Finding 53: Memorandum of Decision, R 3636; Defendants' Post-Trial Brief, R 3119/12-13, 3119/52

54. In July of 1954, before any Defendant knew or had been advised that the January 1954 Laramie lining was short-shimmed, Defendant Ford of Kaiser had described to John Sauer of Riverside Cement Co. a bent plate short shim construction and before February 1955, Sauer had installed in the kiln at the Riverside-Oro Grande plant, such short shims constructed from conventional flat shims which he had bent over to achieve spacing.

Annotation, Finding 54: Memorandum of Decision, R 3635-3636; Defendants' Brief on Motion, SR 150/42-45

55. In February 1955, Defendant Ford reported to Kaiser that Harbison-Walker, a competitor of Kaiser, had supplied to one of its customers, kiln lining bricks, each with a short shim bent over the hot face, and that with linings of such construction, substantial improvement had been realized in thermal efficiency.

Annotation, Finding 55: Memorandum of Decision, R 3636-3637; Exh. FJ

56. On February 1, 1955, as a result of what had taken place as set forth in Finding No. 54, Sauer changed a Riverside Cement Co. order pending with Kaiser to provide an attached brick bent-over short shim combination. The result was a brick and short shim unit, i.e., the UNITAB type construction. The order was shipped on March 2, 1955, and installed as needed commencing on May 18, 1955. Further such sales and installations were made by Kaiser prior to December 26, 1955 to Riverside Cement Co. and others. [R 3722]

Annotation, Finding 56: Pre-Trial Order, SR 75-84; Memorandum of Decision, R 3636

57. On March 15, 1955, Defendant Ford called on Southwestern Portland Cement Company at Victorville, California, and discussed the Riverside order described in Finding No. 56 and also discussed another short-shimmed brick-shim unit being offered by General Refractories, a competitor of Kaiser.

Annotation, Finding 57: Memorandum of Decision, R 3637; Exh. FR

58. On April 14,* 1955, Southwestern Portland Cement Company order and received Kaiser short-shimmed brick units (UNITAB type construction) and installed a lining of this product on May 4, 1955.

Annotation, Finding 58: Pre-Trial Order, SR 85-87; Memorandum of Decision, R. 3637

59. During the abortive license negotiation meeting on June 9, 1955, Defendant Ford of Kaiser drew a picture of the Kaiser short-shimmed brick unit (UNITAB type) and advised Rentsch and Anderson of Plaintiff of the fact that Kaiser was then manufacturing and selling such units and that some had recently been installed near Victorville, California. Rentsch and Anderson recognized the fact that Ford was referring to plants of either Southwestern Portland Cement Company of Riverside Cement Co., or both, since both said companies have plants near Victorville and Anderson was well acquainted with personnel at both plants and had visited them on several occasions.

Annotation, Finding 59: Memorandum of Decision, R 3648-3649; Defendants' Post-Trial Brief, R 3119/33-35, 3119/92; Exhs. GK and QD

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*Typographical error—should read—April 4—. See the Pre-Trial Order SR 85-87 and Memorandum of Decision, R 3637.

PLAINTIFF'S SECRET CONCLUSION OF INFRINGEMENT

60. At the June 9, 1955 meeting, Rentsch and Anderson secretly concluded that the unit sketched and described as stated in Finding No. 59 was an infringement of the patent they hoped to obtain, but consciously concealed that conclusion from Defendants. Neither at that meeting nor at any time thereafter, until late in 1956, did Plaintiff disclose or suggest this secret conclusion to any Defendant. [R 3723]

Annotation, Finding 60: Memorandum of Decision, R 3648-3649; Defendants' Post-Trial Brief, R 3119/33-35, 3119/92

61. Plaintiff has offered to the court the explanation that plaintiff did not disclose its conclusions of infringement set forth in Finding No. 60 because Plaintiff assumed that the Kaiser installation and uses described to it on June 9, 1955, were Kaiser's "field trials" integral to the license negotiations. The court finds the suggested assumption by Plaintiff totally unreasonable and this explanation to be incredible and unbelievable.

Annotation, Finding 61: Memorandum of Decision, R 3649-3650; Defendants' Post-Trial Brief, R 3119/92-95, 3119/185-196

OTHER SHORT SHIM INSTALLATIONS

62. General Refractories and Harbison-Walker offered for sale and sold unitary short-shimmed basic brick-shim articles in competition with Kaiser commencing at a date prior to December 26, 1955, and such

articles were installed in rotary kilns by their customers, including Riverside Cement Co. and Southwestern Portland Cement Co., prior to December 1955.

Annotation, Finding 62: Memorandum of Decision, R 3636-3637

63. In May of 1956, Defendant Ford of Kaiser advised Rentsch in a telephone conversation that Kaiser had up to that date made and sold 30 installations of the UNITAB type of kiln liner. While Rentsch disputes that he was so advised, the Court finds a contemporaneous memorandum of the conversation made by Ford to be more reliable.

Annotation, Finding 63: Memorandum of Decision, R 3667-3668; Exh. KA; Ford Testimony Tr 9959-9962

THE DAVIS-SCHOONOVER LETTER

64. On February 1, 1956, Defendant Davis wrote to Schoonover of Plaintiff and explained the purpose and effect of Kaiser's proprietary interest and patent notice which was rubber stamped on certain drawings of Plaintiff's radial shims. In the letter, Davis disclaimed any interest in the shims shown on the drawings. By such letter, Davis also advised Schoonover that he agreed that the "Anderson Device" (by which Davis clearly meant radial shims and no others) had been disclosed to Defendants in confidence. [R 3724]

Annotation, Finding 64: Memorandum of Decision, R 3662-3664, 3694-3695; Defendants' Post-Trial Brief, R 3119/101-103

65. Plaintiff's contention that the letter of Davis to Schoonover of February 1, 1956, constituted or contained an admission against Kaiser's interest or position

in this controversy and in support of Plaintiff's claims therein is totally unreasonable and a gross perversion by Plaintiff of the letter's terms and intent. Said letter refers exclusively to radial shims and is out of context to any other reference. It was written by Defendant Davis without ulterior motive on his part and without secret, or any intent to induce a false sense of security in Plaintiff. Plaintiff knew that the disclaimer in the letter referred to radial shims only, and did not rely upon such statement or the letter as a whole as a disclaimer by Defendant of adverse interest in any and all short-shimmed articles used in lining cement rotary kilns. Plaintiff already knew, as of June 9, 1955, that Kaiser had developed such an article and had sold the same to its customers. At no time did Plaintiff have any reasonable belief that the February 1, 1956, letter of Davis was intended or understood by Defendants, or any of them, to be an admission of Plaintiff's claim to invention or proprietary right of or to "short shimming" or "spacing". In context, it is preposterous to suggest that this letter refers to anything but the radial shim design.

Annotation, Finding 65: Memorandum of Decision, R 3664-3665, 3681-3882, 3694-3695; Defendants' Post-Trial Brief, R 3119/101-103

RESPECTIVE ATTITUDE OF THE PARTIES

66. At all times during the abortive license negotiations, Kaiser's conduct was completely consistent with straightforward business practice. Kaiser forthrightly disclosed to Plaintiff what it was doing with short shims.

Annotation, Finding 66: Memorandum of Decision, R 3650, 3683

67. As stated in earlier findings, although Plaintiff's agents Rentsch and Anderson were advised on June 9, 1955, of the prior manufacture and sale of Kaiser's unitary short shimmed kiln liner (later termed UNITAB liner) and secretly concluded it infringed [R 3725] Plaintiff's hoped-for patent, Plaintiff continued to deal with Defendant. But at no time prior to a charge of infringement in late 1956 did Plaintiff disclose, intimate, or suggest to any Defendant that Plaintiff considered such UNITAB liner to be an infringement of any right of Plaintiff, an embodiment of Anderson's invention, or any part of the subject matter of the license negotiations. On the contrary, Plaintiff knowingly and deliberately concealed its secret conclusion of infringement and its purpose to commit Kaiser to a license broad enough to embrace the Kaiser UNITAB liner. All negotiations between the parties were, and were known by Plaintiff to be at arms length and not in an atmosphere of trust or confidence on Plaintiff's part.

Annotation, Finding 67: Memorandum of Decision, R 3648-3650, 3681-3682

FINDINGS AS TO THE OVERALL RELATIONSHIP AND DISCLOSURES BETWEEN THE PARTIES

68. The only confidential or trust relationship between Plaintiff and Defendants which existed at any time related solely to Plaintiff's radial shim development. Such confidential relationship was not violated

by Defendants, or any of them, in any way or at any time.

Annotation, Finding 68: Memorandum of Decision, R 3689, 3694-3695; Defendants' Brief on Motion, SR 150/60-71, 150/76-81; Defendants' Post-Trial Brief, R 3119/19-28, 3119/31-32

69. None of the refractory processes, structures, devices or teachings of the Anderson invention, or any valuable information disclosed or communicated by Plaintiff to Defendants was ever employed in any way by Defendants, or any of them.

Annotation, Finding 69: Memorandum of Decision, R 3689

70. No information belonging to, or originating with, Plaintiff was employed by Defendants, or any of them, in the development, manufacture, use or sale of Kaiser's UNITAB kiln liner or any of its predecessors in development or in any other product developed, manufactured, used, or sold by Kaiser. [R 3726]

Annotation, Finding 70: Memorandum of Decision, R 3689

71. None of the information disclosed by Plaintiff to Defendants or any of them, was used to obtain Davis Patent No. 2,829,877 issued to Defendant Kaiser Aluminum & Chemical Corporation; the Davis patent is not a patent upon an invention of the Plaintiff; and the Davis patent is not a "patent in suit".

Annotation, Finding 71: Memorandum of Decision, R 3689-3690.

72. Any information disclosed by Plaintiff in confidence to Defendants. or any of them, has been main-

tained in such confidence, is not being used by Defendants, or any of them in competition with Plaintiff, and none of Defendants is unfairly competing with Plaintiff by use of such information or disclosures or otherwise.

Annotation, Finding 72: Memorandum of Decision, R 3690

73. Assuming a confidential relationship between the parties and that in the context of such relationship defendants obtained information of value from the plaintiff, an implied promise not to use such information for the benefit of the defendants or to the detriment of the plaintiff would have arisen. Suit for breach of such promise would be subject to the two-year statute of limitations. Even making such assumptions, which are hypothetical, since the findings of the Court have been otherwise, no cause of action for fraud would arise as a consequence of such a breach. Further, the Court finds that there was no actionable fraud on the part of the defendants. The three-year statute of limitations does not apply to the first five causes of action; rather, the two-year statute of limitations applies to all of plaintiff's claims except the claim for relief for breach of a written contract. No conduct of defendants, or any of them, toward plaintiff was shown to constitute any variety of fraud and applicable statutes of limitation were not tolled thereby.

Annotation, Finding 73: Memorandum of Decision, R 3690 [Proposed Finding 73 was deleted and this finding was drafted in its entirety by the Court.]

74. There was no express contract, oral or in writing, between Plaintiff and Defendants, or any of

them, relative to any of the claims of Plaintiff involved in this litigation. Any negotiations with respect to such subject matter were abortive and never ripened into agreement. Specifically, there was no express agreement by Defendants, or any of them, to pay Plaintiff for the use of what Plaintiff has characterized as technical information or trade secrets or simply valuable information, either upon the basis of the reasonable value thereof, or otherwise.

Annotation, Finding 74: Memorandum of Decision, R 3691-3692

75. "Short" shims placed parallel to the axis of the kiln between bricks laid in rings in the kiln are not equivalent to radial "short" shims placed between such rings and at right angles to the axis of the kiln. The only feature common to both above-mentioned shims is that each is installed in such a manner as to leave a space between the shims and the shell, Kaiser did not learn [R 3727 and R 3728] of such common feature from Plaintiff or ever agree with Plaintiff in writing or otherwise that it would not manufacture or sell shims designed to be installed in such a manner.

Annotation, Finding 75: Memorandum of Decision, R 3691-3692

76. Defendant Kaiser violated no trust with respect to, and did not misappropriate, any of Plaintiff's trade secrets or information and did not become unjustly enriched either by the sale of its refractory articles which utilize a shim which does not touch the kiln shell or by any other act or conduct herein, and Kaiser has not competed unfairly with Plaintiff.

Annotation, Finding 76: Memorandum of Decision, R 3693-3694

77. Kaiser made no field trials of any product employing trade secrets or valuable information belonging to, or obtained from, Plaintiff. The use of Kaiser's products by its customers, which use resulted in a kiln lining in which there was a space between the shim and the shell, were uses which resulted from sales of Kaiser products which was developed without reference to any secret or any information of Plaintiff and were not field trials or experiments made on behalf of plaintiff or defendants.

Annotation, Finding 77: Memorandum of Decision, R 3694; Defendants' Brief on Motion, SR 150/42-45; Defendants' Post-Trial Brief, R 3119/16-17

78. Plaintiff kept its secrets and consciously and deliberately concealed from Kaiser its intent to obtain through Anderson's application and amendment thereof a patent upon short shims for longitudinal placement in the kiln as distinguished from the transverse positioning of the radial shims. Plaintiff well knew that the manufacture and sale of short-shimmed kiln liners by Defendant Kaiser began in June, 1955, or before, and not in October of 1956, as averred by Plaintiff, and that none of such sales by Kaiser constituted the unauthorized use of any valuable property rights or protectible information of Plaintiff.

Annotation, Finding 78: Memorandum of Decision, R 3650, 3681

79. No false representations were made to Plaintiff by Defendants, or any of them, during, or concerning the subject matter of the abortive negotiations referred to in Findings 40 through 50. [R 3729]

Annotation, Finding 79: Memorandum of Decision, R 3689

FINDINGS AS TO THE PATENT CAUSE OF ACTION

* * *

PLAINTIFF'S PATENT IN SUIT

80. Claims 3, 4, 7 and 8 of Plaintiff's patent in suit, are stipulated to be the only claims in issue and all of them are directed to a combination including as elements the features of: (a) "basic" (as opposed to acid or non-basic bricks) and (b) bricks of "substantially uniform physical and chemical composition throughout". Said features are material and essential elements of the combination claimed in each of the claims in issue.

Annotation, Finding 80: Pre-Trial Order, SR 56; Memorandum of Decision, R 3702; Defendants' Post-Trial Brief, R 3119/64-68

81. The original Anderson application Serial No 486,227 (hereinafter called "parent" application) contained only six claims in proper statutory form, none of which contained any reference to either (a) "basic" brick, or (b) bricks of "substantially uniform physical and chemical composition throughout".

Annotation, Finding 81: Patent Office Record, R 2255-2263

82. The specification of the parent application together with an affidavit of Anderson filed therein as well as the Continuation-in-Part application, all clearly state that it was not an essential element of Anderson's invention that it be used with any particular type of brick.

Annotation, Finding 82: Patent Office Record, R 2255-2263, 2275 (1898-1913)

83. The evidence, including the expert testimony, establishes that the disclosure of metal plates in the original application would not indicate to one skilled in the art in the manner provided in 35 U.S.C. 112, or at all that the invention was intended to be limited to use in combination with "basic" as opposed to other types of brick.

84. Nothing in the specification, drawings, or claims of the parent application as filed, disclosed or suggested that [R 3730] Anderson's claimed invention resided in the use of "basic" brick or brick of "substantially uniform physical and chemical composition throughout". Moreover, nothing in said disclosure or claims of the parent application indicated that the invention was of such breadth as to cover any arrangement in which the shims are longitudinally oriented and coextensive with a single adjacent brick, i.e., do not extend across the end joints between longitudinally aligned bricks.

85. Plaintiff's parent application was filed on February 4, 1955, over one year after the initial installation of radial "Anderson Shims" at Laramie, Wyoming.

86. Plaintiff's Continuation-in-Part application upon which the patent in suit eventually issued, was filed on December 26, 1956 and continued new matter not shown or suggested in the parent application as filed, such new matter including a reference to bricks of "substantially uniform composition throughout."

87. The claims in issue were inserted in the Continuation-in-Part application by amendment thereto, were presented to the Patent Office for the first time in early 1958, and were allowed only after an appeal to the Board of Appeals in the Patent Office. Such claims

included additional new matter inserted as of early 1958 in that they indicated to the Patent Office for the first time on said date that "basic" brick was claimed as an essential element of Anderson's invention. Thus, the claims in suit are based upon new matter not disclosed in the parent application. [R 3731]

THE PRIOR ART

88. The scope of the claims in suit is such that the art to which the subject matter of the claims pertains or with which it is most clearly connected within the meaning of 35 U.S.C. §§ 102, 103 and 112, embraces all refractory lined rotary kilns, whether used for cement manufacture or otherwise.

Annotation, Finding 88: Memorandum of Decision, R 3697, 3699-3700

89. The prior art against which the alleged patentable novelty of Plaintiff's claims in issue must be measured includes in addition to that cited by the Patent Office, the following prior art patents, printed publications, and prior art devices not considered by the Patent Office:

UNITED STATES PATENTS

Patentee	Patent No.	Date of Patent
Morlack	2,125,192	July 26, 1938
Morlack	2,125,193	July 26, 1938
Goldschmidt	2,216,813	October 8, 1940
Geistler	2,231,498	February 11, 1951
Batscheller	2,256,272	September 16, 1941
Cope	2,580,519	January 1, 1952
Heuer et al.	2,632,793	September 22, 1953
Wilkins	2,915,893	December 8, 1959 (Filed March 27, 1953—see 35 U.S.C. 102(e))

FOREIGN PATENTS

Country of Patentee	Patent No.	Date of Patent
Austria	148,268	1937
Austria	160,679	1941
France	1,126,270	1956
Germany	820,320	1949
Great Britain	638,767	June 14, 1950

[R 3732]

Annotation, Finding 89: Book of Prior Art Patents, Exh. S

PUBLICATION

Publication entitled "Refractories in Portland Cement Manufacture" by Leopold Tschirky—reprinted from a paper presented at a Committee of Portland Cement Association meeting at Bethlehem, Pennsylvania, on September 19, 1944 (Exhibit BX).

Annotation, Finding 89 (Publication): Memorandum of Decision, R 3591

PRIOR ART DEVICES, PUBLIC USES, AND SALES NOT NECESSARILY DESCRIBED IN PRINTED PUBLICATIONS

90. Use and knowledge of kiln linings containing bent or "cut out" metal shims located in the rings of brick and spaced from the shell of rotary kilns lined with basic brick took place and existed at the following places on the dates indicated:

(a) Conventionally shaped basic refractory kiln lining bricks with spaced shims attached thereto by co-molding and known as the "RITEX" single plated brick were manufactured by General Refractories Co. as early as 1940 and in any

event long before September 14, 1953 and used to line rotary cement kilns.

Annotation, Finding 90 (a): Memorandum of Decision, R 3700; Defendants' Post-Trial Brief, R 3119/53

90(b) Northwest Magnesite Co., Cape May, New Jersey, use commencing not later than 1944 and, in any event, long before September 14, 1953.

Annotation, Finding 90 (b): Memorandum of Decision, R 3698; Defendants' Post-Trial Brief, R 3119/49-50

90(c) Mathieson Alkali Works, Saltville, Virginia, use commencing not later than 1937 and, in any event, long before September 14, 1953.

Annotation, Finding 90 (c): Memorandum of Decision, R 3698; Defendants' Post-Trial Brief, R 3119/45-49

90(d) Ideal Cement Company, Ada, Oklahoma, use commencing not later than 1950 and, in any event, long before September 14, 1953 [R 3733]

Annotation, Finding 90 (d): Memorandum of Decision, R 3698; Defendants' Post-Trial Brief, R 3119/50-53

90(e) Information as to such linings and the use thereof is contained in General Refractories Bulletin No. 1622 - "STEELKLAD and Modified STEELKLAD for Rotary Kiln Linings", first printed and distributed in February 1955. (Exhibit FM). (This bulletin is "prior art" as to Plaintiff's Continuation-in-Part application).

Annotation, Finding 90 (e): Defendants' Brief on Motion, SR 150/52-53

ANDERSON'S DATE OF INVENTION

91. The earliest date as to which Plaintiff submitted any probative evidence of the date of Frank J. Anderson's purported invention in issue is September 14, 1953 and his invention disclosed and claimed in the patent in suit was no earlier than that date.

Annotation, Finding 91: Memorandum of Decision, R 3697

PRIOR KNOWLEDGE AND USE

92. The purported invention defined in each of Plaintiff's patent claims in issue is completely anticipated by the knowledge and use shown by one or more of the prior art patents, publications and uses listed in Findings 89 and 90, including without limitation the following prior knowledge and use:

[92(a) Deleted]

92(b) Publication entitled "Refractories in Portland Cement Manufacture" by Leopold Tschirky—Reprinted from presentation at Committee of Portland Cement Association at Bethlehem, Pennsylvania, on September 19, 1944 (Exhibit BX).

Annotation, Finding 92 (b): Memorandum of Decision, R 3591

92(c) "RITEX" single plated brick manufactured by General Refractories in about 1940 and in any event, long before September 14, 1953. [R 3734]

Annotation, Finding 92 (c): Memorandum of Decision, R 3700

92(d) Northwest Magnesite Co., Cape May, New Jersey, use commencing not later than 1944 and, in any event, long before September 14, 1953.

Annotation, Finding 92 (d): Memorandum of Decision, R 3698

92(e) Mathieson Alkali Works, Saltville, Virginia, use commencing not later than 1937 and, in any event, long before September 14, 1953.

Annotation, Finding 92 (e): Memorandum of Decision, R 3698

92(f) Ideal Cement Company, Ada, Oklahoma, use commencing not later than 1950 and, in any event, long before September 14, 1953.

Annotation, Finding 92 (f): Memorandum of Decision, R 3698

93. As to each of Plaintiff's patent claims in issue, the purported invention defined therein was known by one or more persons, including the patentees, author, and personnel of the companies listed in Finding No. 92 before the alleged invention by F. J. Anderson.

94. Each and all of the uses described in Finding No. 90 constituted prior knowledge, and each was a prior and public use of the invention within the meaning of 35 U.S.C. 102 and was not a "secret use" and was not experimental, and no effective effort was made by any of such users or those having such knowledge to suppress or conceal the same from employees of such user or to prevent dissemination of knowlege of such use, or to conceal the same from refractory salesmen

and other authorized visitors to the premises of such user.

Annotation, Finding 94: Memorandum of Decision, R 3698

95. The evidence presented by Defendants as to the prior uses described in Finding No. 90 was clear, complete and convincing, being supported and corroborated documents and physical evidence. [R 3735]

Annotation, Finding 95: Memorandum of Decision, R 3698

OBVIOUSNESS

96. As to each of Plaintiff's patent claims in issue, the differences, if any there be, between the subject matter sought to be patented thereby and the prior art (including that listed in Findings 89 and 90 and that cited by the Patent Office) are such that the subject matter as a whole would have been obvious at the time the Anderson invention was made to a person having ordinary skill in the refractory art or the operation of rotary kilns.

Annotation, Finding 96: Memorandum of Decision, R 3700

STATUTORY BARS

97. As to each of Plaintiff's patent claims in issue, the subject matter had been on sale for more than one year prior to Anderson's application for patent in that the refractory materials and metal plates employed in one or more kilns of the prior art users listed in Finding 90 were on sale and sold to such users more than one year prior to the filing date of Plaintiff's original application.

Annotation, Finding 97: Memorandum of Decision, R 3702

98. As to each of Plaintiff's patent claims in issue, the subject matter had been on sale for more than one year prior to Plaintiff's Continuation-in-Part application and the subsequent first presentation of said claims to the Patent Office. Such prior sales and offers of sale include those by Kaiser and by General Refractories and by Harbison-Walker described in Findings 55 through 58, and 62.

Annotation, Finding 98: Pre-Trial Order, SR 75-87; Memorandum of Decision, R 3702; Defendants' Post-Trial Brief, R 3119/75-77

99. The sales by Kaiser, General Refractories and Harbison-Walker referred to in Finding No. 98 and the uses by the purchasers of the products so sold were regular sales and uses for profit, and none of them constituted "experimental use" of the invention at issue herein. [R 3736]

Annotation, Finding 99: Memorandum of Decision, R 3703-3704; Defendants' Post-Trial Brief, R 3119/75-77

100. Plaintiff's agent and so-called "attorney-in-fact" Lloyd Rentsch, son-in-law of Plaintiff's president, was in charge of Plaintiff's patent program and actively participated in and directed all phases of the Anderson application, including the initial preparation and the prosecution before the Patent Office Examiner and Board of Appeals. Rentsch was informed of Plaintiff's duty of full disclosure to the Patent Office by Edward O'Brian, plaintiff's patent attorney, and as-

sumed full responsibility for a full and truthful presentation of all material facts bearing on the patentability of Anderson's invention.

Annotation, Finding 100: Memorandum of Decision, R 3685-3686; Elliott Affidavit, R 1349; Defendants' Post-Trial Brief, R 3119/111, 3119/120, 3119/150-151

101. Edward O'Brian, Plaintiff's patent attorney of record, by written contract entered into prior to the preparation and filing of the original Anderson application, agreed to and in fact did leave entirely to Rentsch and others in Plaintiff's management, the determination of what the facts were concerning Anderson's invention, which such facts would and which facts would not be presented to the Patent Office and what arguments concerning such facts would be made to the Patent Office. Said contract made it possible to conceal material facts from the Patent Office without the fact of concealment fully coming to the attention of O'Brian.

Annotation, Finding 101: Memorandum of Decision, R 3687; Defendants' Post-Trial Brief, R 3119/142-144, 3119/151-154

102. In the summer of 1955, during the occurrences set forth in Findings 40 through 50, 59 and 60, Plaintiff and its agents and attorneys embarked upon a plan to introduce new matter and revised claims into the Anderson application with the intent and purpose of obtaining patent claims specifically covering Kaiser's UNITAB construction. Plaintiff's agents O'Brian and Rentsch determined at the outset that the intent and purpose of its plan should not be revealed to Kaiser or to the Patent Office. Pursuant to the aforesaid plan,

Plaintiff and its agents and attorneys took (among others) the following actions: [R 3737]

Annotation, Finding 102: Memorandum of Decision, R 3679-3684 and 3702; Exh. JS

CONCEALMENT OF STATUTORY BARS

102 (a) Claims including those in issue were inserted in the application and were drafted to include new matter, to wit, the recital that the bricks be of "substantially uniform physical and chemical composition throughout". Amended claims expressing this limitation were presented to the Patent Office for the first time in an amendment to the parent application filed March 2, 1956. On said date, as Plaintiff's agents including Rentsch and Anderson claims had been in public use and on sale for more than one year and Rentsch and O'Brian also knew that the above amendment would and did constitute "new matter" in the application and that said claims would, in all likelihood, be rejected on that ground, as they ultimately were on January 7, 1957.

Annotation, Finding 102(a): Defendants' Post-Trial Brief, R 3119/91-92

102(b) On December 26, 1956 realizing that an application containing new matter would be required to support allowable claims covering Kaiser's UNITAB liners, (which Plaintiff had learned in June of 1955 were then on sale and in commercial use), Plaintiff filed its Continuation-in-Part application containing such new matter (termed therein "not-common" subject matter) and claims based thereon. In said application, Ander-

son falsely stated under oath in part as follows: ". . . that as to the subject matter of the present application not common to the prior application, I do not know and do not believe that the same was ever . . . *in public use or on sale in the* [R 3738] *United States for more than one year* prior to the present application . . ." (Emphasis supplied)

As set forth in Findings 39, 59 and 60, Rentsch and Anderson *did* know and believed that kiln liners embodying the aforesaid "not-common" subject matter were in public use and on sale on or before June 9, 1955. Thus, the above quoted statement was a deliberate falsehood.

Annotation, Finding 102(b): Defendants' Post-Trial Brief, R 3119/92-96

102(c) Knowing that the parent application did not mention "basic" brick, that the Continuation-in-Part application specifically stated that Anderson's invention contemplated either basic or non-basic brick with no preference for either, Plaintiff for the first time on February 13, 1958, added new claims to the application which included "basic" brick as an element and argued such element to be essential to patentability. As of this date, Plaintiff through its agents and attorneys had received additional knowledge of the substantial commercial use and sale of the Kaiser UNITAB liners commencing, to Plaintiff's knowledge, more than one year prior to that date and more than one year prior to the Continuation-in-Part filing date. The claims added on February 13, 1958, as later amended, became the claims in issue.

Annotation, Finding 102(c): Defendants' Post-Trial Brief, R 3119/63-68

102(d) On May 27, 1959, just prior to issue of the patent in suit, Plaintiff caused to be filed in the Patent Office, Anderson's final supplemental oath which reiterated the allegation quoted in Finding 102(b). Prior to the last named date, Plaintiff, and particularly Rentsch, had determined to their satisfaction through Plaintiff's own independent [R 3739] survey (See Finding 121 *ante*) that short shimmed basic bricks fully meeting the claims in issue had been on sale and in public use in several Southern California cement plants for more than one year prior to the Continuation-in-Part filing date, and were sold and used not only by Kaiser and its customers, but also by other refractory manufacturers and their customers as well.

Annotation, Finding 102(d): Defendants' Post-Trial Brief, R 3119/98

102(e) When the final supplemental oath referred to in Finding 102(d) was being prepared, and prior to its consideration or execution by Anderson, Plaintiff's attorney O'Brian had been expressly reminded and warned by his Washington associate that the allegations in said oath concerning public use and sale of the "not common" subject matter could be fraudulant if such use and sale was more than one year prior to the Continuation-in-Part filing date. As stated in Findings 39, 59, 60 and 63, Plaintiff's agents, particularly Anderson and Rentsch, knew that this was the case. Not-

withstanding such warning, Anderson executed and Rentsch did not disapprove or question said final supplemental oath.

Annotation, Finding 102(e): Defendants' Post-Trial Brief, R 3119/98-99

103. In a Petition to Make Special filed in the Patent Office on December 11, 1957, O'Brian (Plaintiff's attorney) argued on behalf of Plaintiff:

> "At this time [fall of '56] the Monolith organizations were not aware that Kaiser was actually going to manufacture this type of kiln liner [UNITAB]."

Said petition as well as Anderson's oath referred to in Findings 102(b) and (d) and (e), as well as virtually all other papers and briefs filed by O'Brian in said application were read, edited and approved [R 3740] by Rentsch before filing and as stated in Findings 39, 59 and 60, Rentsch and Anderson both know that the above quoted statement was not true and, on the contrary, they *were* aware of Kaiser's manufacture and sale of UNITAB liners prior to June 9, 1955.

Annotation, Finding 103: Defendants' Post-Trial Brief, R 3119/33-35, 3119/92, 3119/120-121; Patent Office Record, R 1945

104. In an affidavit filed in the Patent Office on December 18, 1957, in support of the aforesaid Petition to Make Special, Rentsch stated that in 1955 he was not certain that Kaiser would manufacture the UNITAB construction and in that connection, further stated as follows:

> "(6) It is considered extremely difficult, if not impossible, to obtain more complete evidence than

is presented in this affidavit as to the fact that Kaiser Aluminum and Chemical Sales, Inc., is actually on the market at the present time and has been on the market since the latter part of 1956 with the so-called 'Unitab' kiln liners. The Kaiser firm's 'Unitab' kiln liners are of such a nature that they are installed within the interior of rotary kilns where they cannot be fully observed on casual visits to various plants. Further, the general policy in industries in which rotary kilns are used is not to allow competitors to determine precisely what is being done by their competitors."

Annotation, Finding 104: Patent Office Record, R 1949

105. In view of the facts known to Anderson and Rentsch as stated in Findings 59, 60 and 63, the statements set forth in Findings 103 and 104 filed on December 11, 1957, and December 18, 1957, respectively, as well as Anderson's earlier Oaths referred to in Findings 102(b) and (d) were deliberate falsehoods which were designed to, and did conceal from the Patent Office the fact that the claims now in issue were—at the time they were presented—unpatentable and invalid. [R 3741]

Annotation, Finding 105: Defendants' Post-Trial Brief, R 3119/95, 3119/99-100

106. In the aforementioned Petition to Make Special filed December 18, 1957, Plaintiff represented to the Patent Office that the purpose of the license negotiations between Monolith and Kaiser was to grant Kaiser a license "with respect to production of the so-called 'Unitab' kiln liner". In view of the facts known to

Rentsch, as stated in Findings 59 through 61, this was a deliberate falsehood.

Annotation, Finding 106: Memorandum of Decision, R 3649-3650; Defendants' Post-Trial Brief, R 3119/100-101

107. One obvious purpose of Plaintiff in presenting the above falsehood (Finding 106) to the Patent Office was to try to support to a further misrepresentation made to the Patent Office, to wit, that Kaiser "admitted" that the content of the Anderson application had been disclosed to Kaiser in confidence during the license negotiations and to plant in the minds of the Patent Office personnel the conclusion that Kaiser also admitted that following, and as a result of the negotiations with Plaintiff, it had developed the UNITAB liner and embodied the Anderson invention therein.

Annotation, Finding 107: Defendants' Post-Trial Brief, R 3119/101-103

108. In support of the false information given the Patent Office, as stated in Finding 106, Rentsch and O'Brian submitted to the Patent Office the Davis-Schoonover letter of February 1, 1956 (See Findings 64 and 65) together with other letters completely out of context therewith. Knowing that said letters were not in context, Rentsch and O'Brian argued to the Patent Office that they were, and that they showed that Kaiser had appropriated Anderson's invention and thereafter embodied it in the UNITAB liner. In view of the facts known to Rentsch as stated in Findings 59 through 61, 64 and 65 this was still another deliberate misrepresentation [R 3742]

Annotation, Finding 108: Memorandum of Decision, R 3662-3665; Defendants' Post-Trial Brief, R 3119/101-104

109. In further support of its representation to the Patent Office that Kaiser had appropriated Anderson's invention, it was strongly suggested, if not expressly stated, to the Patent Office that the Anderson application itself was disclosed to Kaiser during the license negotiations and that the UNITAB liner was developed only *after* such disclosure. In view of the facts known to Rentsch as stated in Findings 50 and 59 through 61; such was clearly not the case and Rentsch knew it.

Annotation, Finding 109: Defendants' Post-Trial Brief, R 3119/101-103

110. The false impressions Plaintiff sought to convey as stated in Findings 106 through 109 were at least in part entertained by the Patent Office Board of Appeals, since the Board clearly regarded the UNITAB liner to be an outgrowth and manifestation of Anderson's invention and the commercial success of the UNITAB liner to redound to the benefit of Anderson's invention.

Annotation, Finding 110: Defendants' Post-Trial Brief, R 3119/105-106

111. The claims in issue all of which were presented to the Patent Office as stated in Findings 87 and 102, were consistently rejected by the Patent Office Examiner as lacking invention. In an effort to overcome such rejection, Rentsch executed, and O'Brian filed several affidavits in the Patent Office reporting alleged greatly improved and "unexpected" results obtained by the use of the so-called "Anderson Shims" in Plaintiff's own

cement kiln. False allegations, in substance the same as those made to Kaiser as stated in Finding 44, were contained in the Rentsch affidavits filed in the Patent Office. These affidavits were cited and amplified in repeated statements of Plaintiff's attorney O'Brian filed in the Patent Office during the subsequent prosecution of Plaintiff's application before the Examiner and the Board of Appeals in the Patent Office. In substantially all instances, the remarks of counsel were carefully reviewed and in many cases edited by Rentsch before they were submitted to the Patent Office. [R 3743]

Annotation, Finding 111: Memorandum of Decision, R 3705; Defendants' Post-Trial Brief, R 3119/106-124

112. Rentsch's "unexpected results" affidavits and the subsequent arguments based thereon were consciously false and misleading in that they deliberately misrepresented and concealed from the Patent Office material facts and circumstances as follows:

Annotation, Finding 112: Memorandum of Decision, R 3680-3681 and 3705-3706

112(a) Rentsch's true and intimate connection with Plaintiff and his position as attorney-in-fact for the prosecution of the subject application were concealed from the Patent Office, and he was presented as an independent "consulting geologist".

Annotation, Finding 112(a): Defendants' Post-Trial Brief, R 3119/120-121

112(b) Rentsch's limited practical experience in the manufacture of cement and the composition and use of refractories was concealed from the Patent Office.

Annotation, Finding 112(b): Defendants' Post-Trial Brief, R 3119/120-121

112(c) Rentsch's lack of direct personal knowledge of the alleged facts presented as such to the Patent Office was concealed.

Annotation, Finding 112(c): Defendants' Post-Trial Brief, R 3119/119-121

112(d) The fact that the data studied by Rentsch and the performance records upon which the affidavits were allegedly based did *not* actually show the alleged, or any appreciable improvement resulting from spacing *per se* was concealed from the Patent Office.

Annotation, Finding 112(d): Defendants' Post-Trial Brief, R 3119/112-114

112(e) The facts that during the period of kiln study upon which the allegations of improved results were based, several changes other than the installation of "Anderson Shims" were made which, as Plaintiff well knew and as was recorded in its records, materially improved the productivity of the kiln by a factor many times that actually believed by Plaintiff to be due to shims, were concealed from the Patent Office.

Annotation, Finding 112(e): Defendants' Post-Trial Brief, R 3119/114-115

112(f) The facts that the only controlled tests of the "Anderson Shim" had been at Monolith, California and that Rentsch, as he himself well knew, had no [R 3744] accurate, reliable or first hand data as to the use of "Anderson Shims" at Laramie, Wyoming were concealed from the Patent Office.

Annotation, Finding 112(f): Defendants' Post-Trial Brief, R 3119/117

112(g) The fact that the results of use of the "Anderson Shims" by Plaintiff in its kilns at Monolith, California had been universally "disappointing" and such use had not produced at Monolith the "unexpected results" and benefits allegedly achieved at Laramie was concealed from the Patent Office.

Annotation, Finding 112(g): Defendants' Post-Trial Brief, R 3119/114-115, 3119/117, 3119/119

112(h) The fact that the use of the claimed combination of basic brick with spaced shims (allegedly the essence of Anderson's invention) had, prior to the presentation of the Rentsch affidavits to the Patent Office, been abandoned by Plaintiff at Monolith, California was concealed from the Patent Office.

Annotation, Finding 112(h): Defendants' Brief on Motion, SR 150/29-30

112(i) The fact that Plaintiff had no appreciable knowledge or experience in the use of longitudinal spaced shims was concealed from the Patent Office.

Annotation, Finding 112(i): Pre-Trial Order, SR 70

113. At the time of filing his affidavits in the Patent Office concerning the "unexpected results" as stated in Finding 111, Rentsch lacked, and knew that he lacked sufficient information to make the allegations contained therein and also knew that Anderson's expressed opinion did not concur with that stated in the Rentsch affidavits and was, in substance, contrary to some of the representations made to the Patent Office.

Annotation, Finding 113: Defendants' Post-Trial Brief, R 3119/111-121, 3119/178-183

114. Following presentation of the Rentsch affidavits mentioned in Findings 111 through 113, Plaintiff concluded that for its purposes, it needed to present proof of the merit of Anderson's invention to the Patent Office through an ostensibly independent [R 3745] source. Seeking such apparent "proof", Plaintiff sought affidavits from various salesmen of various refractory manufacturers.

Annotation, Finding 114: Defendants' Post-Trial Brief, R 3119/106-09

115. One of the potential affiants approached in this manner was a Harbison-Walker Technical Sales Engineer by the name of Oscar M. Wicken. Plaintiff, through its agents, particularly Rentsch and patent counsel O'Brian, composed and induced Wicken to sign,

an affidavit which was filed in the Patent Office on September 16, 1958.

Annotation, Finding 115: Defendants' Post-Trial Brief, R 3119/124-126

116. The Wicken affidavit was, in part, based on a first draft prepared by Rentsch and O'Brian before discussing the matter with Wicken and before it was known that the draft affidavit would be presented to Wicken or any other Harbison-Walker employee.

Annotation, Finding 116: Defendants' Post-Trial Brief, R 3119/125-129

117. The Wicken affidavit which was ultimately filed in the Patent Office alleged the affiant's familiarity with Plaintiff's patent application and the Laramie installation of so-called "Anderson Shims", and also with the industry practice of kiln lining in early 1955. Said affidavit as filed purported to affirm the alleged novelty and merit of spacing of shims from the kiln shell generally without distinguishing between longitudinal and circumferential shims. Rentsch was the real author of [the] material substance [of] the Wicken affidavit in its final form as filed in the Patent Office and that affidavit was grossly false and misleading in many respects, including the following:

Annotation, Finding 117: Defendants' Post-Trial Brief, R 3119/130-135

117(a) The Wicken affidavit as filed stated that in early 1955 it would have been "contrary to manufacturers' recommendations * * * to have in-

stalled such metal plates or shims with such brick so that they were deliberately spaced from the shell of a rotary kiln". [R 3746] The fact was, as Wicken well knew, that such deliberate spacing of longitudinally oriented metal plates and shims with basic brick had been known and practiced by many companies, including Northwest Magnesite Company, a Harbison-Walker subsidiary at Cape May, New Jersey for a long time prior to 1955. Moreover, such practice both by Northwest Magnesite Company at Cape May and by Olin Mathieson at Saltville, Virginia had been described in detail to several other Harbison-Walker customers as a means of preventing heat loss through the shims. The fact of such prior uses and knowledge of spaced shims was specifically called to Wicken's attention and discussed by him with another employee of Harbison-Walker at the time Wicken was asked by Plaintiff to sign the affidavit. Wicken never intended to include the above-quoted statement in his affidavit as applicable to all shims, because he knew it was not true. It was his intent and purpose to limit his comments entirely to Plaintiff's radial, or as he called them, "circular" shims.

Annotation, Finding 117(a): Defendants' Post-Trial Brief, R 3119/132-135

117(b) In the Wicken affidavit filed in the Patent Office, it is stated:

"I am aware of the installation and performance of the Anderson shims as described in the

aforenoted patent application [Anderson's subject application] with conventional basic bricks at the Monolith Midwest Company plant at Laramie, Wyoming * * *". [R 3747]

As Plaintiff well knew, the facts were that Wicken had never seen, nor had he been accurately informed concerning the shim installation referred to, and had never seen, nor had he been accurately informed as to, the content of the Anderson application. Thus, Wicken was, as Plaintiff well knew, in no position to state whether or not *any* installation was "as described" in the application. In particular, Wicken was unaware that the application included reference to any form of longitudinal shims, this fact having been concealed from him by the Plaintiff.

In addition to concealing the content of the Anderson application from Wicken, Plaintiff actively misled him by furnishing him only with Anderson's "Circular Shim" report referred to in Finding 45, as a description of the invention as to which he was to make an affidavit.

Annotation, Finding 117(b): Defendants' Post-Trial Brief, R 3119/132-135

117(c) The Wicken affidavit as filed, also contains Wicken's statement:

"* * * I believe that the concept of deliberate spacing, as verified by the results of such installation, possesses all the elements of a meritorious and patentable invention".

This was not in fact Wicken's belief as to spacing *per se* of any and all shims, since he knew

that patentable invention requires novelty and also knew positively that such "deliberate spacing" of conventional longitudinal shims had, as of 1955, long been known and practiced in the lining of rotary kilns with basic brick by various companies including his own employer and its customers and that it was, therefore, not novel and not patentable. [R 3748]

Annotation, Finding 117(c): Defendants' Post-Trial Brief, R 3119/132-135

118. Wicken did not sign the original draft affidavit in the form that it was first presented to him, but prepared his own substantially modified draft which Plaintiff rejected and never used. The misstatements referred to in Findings 117(a), (b) and (c) were inserted in the final draft affidavit by Rentsch after Wicken had signed and delivered to Plaintiff his draft in which the quoted language had been deliberately omitted. Also, Wicken's own draft had included certain qualifying language inserted by Wicken to show that he had in mind, and intended his averments to apply, only to the curved or arcuate segmental version of Anderson's claimed invention. The qualifying language in Wicken's draft was deliberately deleted by Plaintiff in the revised and final affidavit which was filed in the Patent Office.

Annotation, Finding 118: Defendants' Post-Trial Brief, R 3119/130-135

119. Although Wicken signed the final draft that was filed, he was induced by Rentsch to do so by falsely

telling him that it was the same in substance as his own draft and changed only to meet Patent Office requirements as to form. Moreover, Wicken was led to believe that his "cooperation" would result in Plaintiff placing substantial orders with his company for brick. Wicken was also told by Rentsch that Plaintiff was under extreme pressure of time and was urged to sign and forward the revised affidavit to Washington without delay. The misrepresentations and urging resulted in Wicken's failure carefully to read and consider the final revised affidavit before he signed it and also resulted in his failure to submit the final draft to the Legal Department at Harbison-Walker, as he had the earlier draft. [R 3749]

Annotation, Finding 119: Defendants' Post-Trial Brief, R 3119/131-135

120. The fraud inherent in the presentation of the false and misleading Wicken affidavit to the Patent Office was further compounded by frequent citation of it by Plaintiff's counsel in subsequent arguments, particularly the language which had been deleted by Wicken in his draft and reinserted by Rentsch in the final draft as filed. Moreover, Wicken was repeatedly referred to as completely "unbiased" and "disinterested". This was an inaccurate characterization of Wicken and his motivation, in view of the hoped for concession from Plaintiff as stated in Finding 119.

Annotation, Finding 120: Defendants' Post-Trial Brief, R 3119/140-141

FRAUDULENT REPRESENTATIONS SPECIFICALLY DIRECTED TO THE PATENT OFFICE BOARD OF APPEALS AND PLAINTIFF'S SCIENTER WITH RESPECT THERETO

121. In October of 1958, Plaintiff, through its agents, including Rentsch, made a survey of cement plants in Southern California by which Plaintiff and Rentsch in particular determined with particularity:

121(a) That Kaiser's UNITAB type of spaced shim installation of which Plaintiff had been advised as early as June 1955, had been continuously in commercial use since a time more than one year prior to the filing date of the Continuation-in-Part application.

Annotation, Finding 121(a): Defendants' Post-Trial Brief, R 3119/94; Exh. PM

121(b) That unitary basic brick and spaced shim articles meeting all the terms of the claims in suit (then under final rejection by the Patent Office) had been manufactured and sold, not only by Kaiser, but by companies other than Kaiser more than one year prior to the filing of the Continuation-in-Part application. [R 3750]

Annotation, Finding 121(b): Defendants' Post-Trial Brief, R 3119/94; Exh. PM

121(c) That what said survey characterized as "experimental work" of the UNITAB type of construction had taken place in 1954 and the installation of which Plaintiff had been informed in June 1955 was not experimental.

Annotation, Finding 121(c): Defendants' Post-Trial Brief, R 3119/94; Exh. PM

122. Notwithstanding the knowledge and information obtained by Plaintiff and especially by Rentsch, as set forth in Finding 121, Plaintiff proceeded to prepare and file its brief on appeal to the Board of Appeals in the Patent Office, which brief contains numerous deliberate misstatements of, and with respect to, said knowledge and information, all of which were calculated to conceal from the Board and others in the Patent Office the fact that articles embodying the invention then in issue had been on sale and in public use for more than a year prior to the filing of the Continuation-in-Part application.

Annotation, Finding 122: Defendants' Post-Trial Brief, R 3119/98, 3119/105-106

123. Rentsch participated extensively in the preparation of the aforesaid appeal brief and at the time he and attorney O'Brian were conscious and acutely aware of the fact that the Continuation-in-Part application contained new matter upon which the appealed claims depended for support and that Plaintiff was not entitled to rely on the original filing date of the parent application for said appealed claims.

Annotation, Finding 123: Defendants' Post-Trial Brief, R 3119/91-92, 3119/96

MATERIALITY OF FRAUD

124. The matters of statutory bar concealed from the Patent Office, as set forth in Findings 97 through 99, were each and all material and important since, if they had been disclosed, they would have furnished to the Examiner a clear and conclusive statutory ground for rejection of the claims in issue and a ground en-

tirely independent of any consideration of commercial success or so-called unexpected results. [R 3751]

Annotation, Finding 124: Memorandum of Decision, R 3702; Defendants' Post-Trial Brief, R 3119/105-106

125. Plaintiff's misrepresentations as to the license negotiations with Kaiser, as set forth in Findings 106 through 110, were material and important since they led the Board of Appeals mistakenly to believe that Kaiser's UNITAB was an admitted embodiment of Anderson's invention disclosed to it and, as a result of such mistaken belief, to hold that commercial success of the UNITAB was evidence of the patentability of Anderson's invention.

Annotation, Finding 125: Defendants' Post-Trial Brief, R 3119/105-106

126. The misrepresentations and concealments with respect to unexpected results, as set forth in Findings 111 through 113, were material and important since they were the stated grounds and assumed factual basis upon which the Patent Office Board of Appeals premised its decision and order reversing the Examiner and allowing the claims in issue.

Annotation, Finding 126: Defendants' Post-Trial Brief, R 3119/137-140

127. The misrepresentations included in the Wicken affidavit, as set forth in Findings 114 through 120, were material and important since they led the Patent Office to believe that spacing of shims generally was a novel concept unknown to the trade in 1955 and such misrepresentations and Plaintiff's other acts set forth in

said Findings concealed from the Patent Office the truth, i.e., that as Wicken and his employer, among others, well knew, such concept had been known and practiced by many persons and companies in diverse locations and for many years prior to Anderson's alleged invention.

Annotation, Finding 127: Defendants' Post-Trial Brief, R 3119/140-142

128. If the truth of any of the matters set forth in Findings 100 through 120 had been known to the Patent Office Board of Appeals, it is reasonable to believe that the Board would have affirmed the Examiner's rejection of all of the claims in issue and Plaintiff would not have obtained a patent containing any of the claims now in suit. [R 3752]

Annotation, Finding 128: Defendants' Post-Trial Brief, R 3119/105-106, 3119/137-142

129. The Court has considered each and all of the misrepresentations set forth in Findings 100 through 120 in the light of the knowledge the Plaintiff's agents had when the representations were made. When viewed in that light, and taken as a whole, they avoid the known truth. An acceptable explanation may be plausible when each small point is isolated from the others, but when the picture is viewed in its entirety, including the Plaintiff's own contemporaneous documents and business records, the fact that the Patent Office was not told the then known truth is inescapable.

Annotation, Finding 129: Memorandum of Decision, R 3706

130. Insofar as the testimony of Plaintiff's witnesses Rentsch, Bechtold, Johnson and Schoonover, and that of Plaintiff's patent attorney O'Brian is inconsistent with the foregoing Findings 1 through 129, or any of them, the Court finds such witnesses to be unreliable and such testimony to be unworthy of belief.

Annotation, Finding 130: Memorandum of Decision, R 3684-3685, 3688

INFRINGEMENT

131. The Court finds Claims 3, 4, 7 and 8 of the patent in suit to be invalid for each and all of the reasons heretofore stated; but, if valid, said claims have been contributorily infringed by Defendant Kaiser, but not infringed by any other Defendant.

Annotation, Finding 131: Memorandum of Decision, R 3707

ATTORNEYS' FEES

132. This was an exceptional case within the meaning of 35 U.S.C. 285 for the following reasons:

132(a) Plaintiff obtained its patent claims in suit through fraudulent representations to the Patent Office (see Findings 100 through 128, supra).

Annotation, Finding 132(a): Memorandum of Decision, R 3707

132(b) The litigation was unduly, unnecessarily and unreasonably prolonged by Plaintiff's willful, deliberate and persistent refusal to file its pretrial memorandum of contentions of fact and [R 3753] law as required by this Court's Local

Rules, or to disclose its contentions as related to the pleadings.

Annotation, Finding 132(b): Memorandum of Decision, R 3707; Defendants' Post-Trial Brief, R 3119/163-173

132(c) The conduct of the litigation was further made unnecessarily and unreasonably difficult for Court and Defendants by Plaintiff's willful refusal to cooperate in the pretrial conference in such manner to achieve a meaningful and useful pretrial order and, as a result, such purpose was largely frustrated.

Annotation, Finding 132(c): Memorandum of Decision, R 3707-3708; Defendants' Post-Trial Brief, R 3119/163-173

132(d) The conduct of the litigation was further unnecessarily and unreasonably prolonged and made unnecessarily difficult by Plaintiff's willful and persistent conduct throughout the litigation in concealing from the Court the purpose, if any, of Plaintiff's examination of witnesses and the grounds, if any, for objection.

Annotation, Finding 132(d): Memorandum of Decision, R 3707; Defendants' Post-Trial Brief, R 3119/163-173

132(e) Plaintiff, on frequent occasions throughout the trial, took extreme positions and adopted strained constructions of the evidence, all of which further unduly prolonged the trial.

Annotation, Finding 132(e): Memorandum of Decision, R 3708; Defendants' Post-Trial Brief, R 3119/163-173

133(a) Evidence later submitted by Defendants herein and clearly supporting the facts stated in Findings 89 through 120 was made known to Plaintiff prior to the trial of this action, and the effect thereof was clearly made known to Plaintiff prior to trial. In the face of said evidence, Plaintiff continued to contest every defense tendered and required Defendants to prove all of them. Although Plaintiff represented that it would present evidence rebutting all defenses, it presented [R 3754] virtually no rebuttal evidence on many of the important defenses.

Annotation, Finding 133(a): Memorandum of Decision, R 4669-4670; Defendants' Post-Trial Brief, R 3119/160-163

133(b) Thus, the failure of Plaintiff to concede facts as to which it had no evidence or bona fide reason to contest further unduly prolonged the trial.

Annotation, Finding 133(b): Memorandum of Decision, R 3707-3708; Defendants' Post-Trial Brief, R 3119/160-163

134. Prior to trial, Defendants served on Plaintiff certain Requests for Admissions pursuant to Rule 36, F.R.C.P., which sought admissions of substantial, important and relevant matters of fact. Many of said requests were denied by Plaintiff without good reasons for the denials. Defendants were thus required to, and did prove said matters of fact at trial, which further unnecessarily prolonged the trial and required the testimony of witnesses, some of whom traveled from Pitts-

burgh, Pennsylvania, to Los Angeles, for the purpose of testifying herein.

135(a) After filing of this action and prior to trial, Plaintiff secretly conducted an elaborate *ex parte* experiment in two kilns at Monolith in an attempt to develop evidence to support its contentions as to the value of a short shimmed lining. One kiln was lined with shims between bricks in the ring laid up to be in contact with the shell. The other employed short shims in the ring laid up to have a space of one inch between the cold edge of the shims and the shell. Even through the experiment was weighted in favor of better performance of the kiln with short shims, the results were inconclusive. They failed to establish beyond the probabilities of error that any improvement in either production or lining life [R 3755] was derived by use of short shims. The fact of the weighting and the inconclusive nature of the results were known to Plaintiff prior to trial.

Annotation, Finding 135(a): Memorandum of Decision, R 3674

135(b) The trial was further unduly and unnecessarily prolonged because of Plaintiff's efforts to present the results of the *ex parte* experiment as supporting its contentions, while at the same time attempting to suppress evidence of the weighting and inconclusive character of the results and still further prolonged because of the necessity of extended cross-examination of Plaintiff's witnesses to show the weighting that

was done by Plaintiff in an effort to achieve what would appear to be the desired results and the necessity of further cross-examination and evidence to show inconclusiveness of the results that actually were obtained, and that Plaintiff and its experts knew the results were inconclusive.

136. In view of the facts stated in Finding 133, and the fact that the patent in suit was obtained by fraudulent representations to the Patent Office with respect to unexpected results known by Plaintiff to be without reasonable basis in fact as stated in Findings 111 through 113; and the further fact that Plaintiff had by its own *ex parte* test described in Finding 135 confirmed the fact that a short shim basic brick lining, such as it charged to be an infringement, actually produced no discernible improvement kiln operation, unexpected or otherwise, the Court finds that this action was largely prosecuted in bad faith in that the Plaintiff has substantial grounds to doubt the validity of its patent when the amended complaint was filed and thereafter in the course of discovery the grounds of invalidity were forcefully brought to plaintiff's attention but plaintiff continued to prosecute the action after receiving substantial additional affirmative evidence that [R 3756] the patent was and is beyond any reasonable doubt, invalid and unenforceable and plaintiff chose to present its case in a manner which inextricably combined the patent count with the other counts and resisted every effort to simplify and shorten the discovery and trial by segregation of subject matter.

Annotation, Finding 136: Memorandum of Decision, R 4665-4670

137. Kaiser has paid and incurred (exclusive of costs and disbursements) in excess of $424,712.00 on account of legal services of its attorneys thus far rendered in this litigation. Said services comprised an aggregate in excess of 13,559 man-hours. Of such services, an overwhelming proportion were necessarily rendered in connection with defenses of the patent cause.

Annotation, Finding 137: Memorandum of Decision, R 4667; Stipulation, R 4634-4639

138. Giving due consideration to the amount actually paid and incurred by Kaiser for legal services as stated in Finding 137, and mindful of the fact that some services would have been necessary in the defense of this action even if Plaintiff had not joined the patent cause therein and had not engaged in any of the dilatory practices referred to in Findings 132 through 135, and giving due consideration also to the nature of Plaintiff's conduct as set forth in said Findings, and to any and all countervailing equities in favor of Plaintiff, the Court finds the sum of $280,000 to be a reasonable attorneys' fee for services of Defendants' attorneys in this exceptional case. The Court further finds that Defendants are entitled to said sum as an award under 35 U.S.C. 285 and Federal Rules of Civil Procedure, Rule 37(c).

139. Any and all Findings of Fact hereinafter included in the statement of the Court's Conclusions of Law are hereby adopted as part of the Court's Findings of Fact. The Memorandum of Decision heretofore filed in this action is hereby incorporated by reference. [R. 3757]

CONCLUSIONS OF LAW*

1. Any and all conclusions of law hereinbefore included in the statement of the Court's Findings of Fact are hereby adopted as part of the Court's Conclusions of Law.

2. The Court does not have jurisdiction over Defendant Pete Olive but has jurisdiction over the persons of all of the other parties hereto.

3. The action has been dismissed without prejudice as to Defendant Pete Olive.

4. The Court has jurisdiction over the subject matter of the action as framed in the First Amended Complaint as modified and amended by the pre-trial order. The Davis patent (U. S. Patent No. 2,829,877) issued to Defendant Kaiser Aluminum & Chemical Corporation is not a patent in suit.

5. The only confidential or trust relationship between Plaintiff and Defendants which existed at any time related solely to Plaintiff's radial shim development. Such confidential relationship was never violated at any time or in any manner by Defendants, or any of them.

6. There was at no time any express contract, oral or in writing, between Plaintiff and Defendants, or any of them, relative to the claims of Plaintiff in this litigation or any of said claims. Specifically, there was no express agreement by Defendants, or any of them, to pay Plaintiff for the use of what Plaintiff has characterized herein as technical information or trade secrets or simply valuable information, either upon the

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*As revised by Court.

basis of the reasonable value thereof, or otherwise. [3758]

7. The only implied-in-fact contract between Plaintiff and Defendants which existed at any time was between Plaintiff and Defendant Kaiser and related solely to Plaintiff's radial shim development. Defendant Kaiser has never repudiated or violated such implied-in-fact contract.

8. There was at no time any implied-in-law contract between Plaintiff and Defendants, or any of them, with respect to any claim of Plaintiff in this litigation, and none of Defendants became unjustly enriched by reason of any conduct shown herein.

9. None of the information disclosed by Plaintiff to Defendants, or any of them, was used to obtain Davis Patent No. 2,829,877 and the Davis patent is not a patent upon an invention of Plaintff.

10. The Defendants, and each of them, have neither misappropriated any of Plaintiff's trade secrets or technical or other information, nor committed any acts of unfair competition against Plaintiff; and none of Defendants has committed any other legal wrong against Plaintiff relative to its claims involved in this litigation, or any such claim.

11. The statute of limitation applicable to Plaintiff's First through Fifth Causes of Action, except insofar as the Fifth Cause of Action claims breach of an express contract in writing, is California Code of Civil Procedure, Section 339(1), providing a two-year limitation on such actions. Said statute was not tolled, and Plaintiff's First through Fifth Causes of Action, with the exception noted, are each and all barred by said statute. [3759]

12. Plaintiff is not entitled to any relief under its First through Fifth Causes of Action, or any of them, and Defendants are entitled to a judgment dismissing all such causes of action, and all claims for relief therein, on the merits.

13. The date of F. J. Anderson's purported invention in issue, as defined by Claims 3, 4, 7 and 8 of U. S. Patent No. 2,895,726, the patent in suit herein, was no earlier than September 14, 1953.

14. The presumption of validity normally arising from the grant of a patent is, in the case of each of said Claims 3, 4, 7 and 8, rebutted and substantially destroyed by reason of the fraud and misrepresentation practiced by Plaintiff on the Patent Office to procure said claims, and each thereof, and by the failure of the Patent Office to cite or consider the most pertinent prior art as to such claims.

15. Each of said Claims 3, 4, 7 and 8 of the patent in suit is invalid and void because the invention defined therein was known and in actual use by others in this country before the purported invention thereof by F. J. Anderson (35 U.S.C. 102(a)).

16. Each of said Claims 3, 4, 7 and 8 of the patent in suit is invalid and void because the invention defined therein was described in a printed publication in this country before the purported invention thereof by F. J. Anderson (35 U.S.C. 102(a)).

[17 Omitted] [3760]

18. Each of said Claims 3, 4, 7 and 8 of the patent in suit is invalid and void because the differences, if any, between the subject matter sought to be patented and the prior art are such that the subject matter as a

whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains (35 U.S.C. 102-(e) and 103).

19. Each of said Claims 3, 4, 7 and 8 of the patent in suit is based upon new matter disclosed to the Patent Office for the first time in the Continuation-in-Part application that eventually matured into the patent in suit, and therefore the effective filing date for such claims was no earlier than December 26, 1956, the filing date of said Continuation-in-Part application.

20. Each of said Claims 3, 4, 7 and 8 of the patent in suit is invalid and void because the invention defined therein was described in a printed publication more than one year before the effective filing date for such claims (35 U.S.C. 102(b)).

21. Each of said Claims 3, 4, 7 and 8 of the patent in suit is invalid and void because additional new matter upon which said claims are based was introduced by amendment into the Continuation-in-Part application after December 26, 1956, the filing date of such application (35 U.S.C. 132).

22. Each of said Claims 3, 4, 7 and 8 of the patent in suit is invalid and void because the invention defined therein was in public use and on sale at various and diverse times and places in this country, some of which were more than one year before the effective [3761] filing date for such claims and others of which were more than one year prior to February 4, 1955, the filing date for the original application upon which the Continuation-in-Part application was based (35 U.S.C. 102-(b)).

23. Each of said Claims 3, 4, 7 and 8 of the patent in suit is invalid and unenforceable because procured by fraud practiced on the Patent Office.

24. Since each of said Claims 3, 4, 7 and 8 is invalid on each of the grounds hereinabove set forth, none of such claims is infringed; but if valid, Claims 3, 4, 7 and 8 have been contributorily infringed by Defendant Kaiser, but not infringed by any other Defendant.

25. Plaintiff is not entitled to relief under its Sixth Cause of Action (patent infringement) and Defendants are entitled to a judgment dismissing such cause of action, and every claim for relief stated therein, on the merits.

26. This is an exceptional case within the meaning of 35 U.S.C. 285, and reasonable attorneys' fees should be awarded to Defendant.

27. The Defendants are entitled to judgment against the Plaintiff in the sum of $280,000.00 as reasonable attorneys' fees, together with their costs of suit.

Dated: Jan. 5, 1967.

/s/ Albert Lee Stephens, Jr.
United States District Judge

Received a copy hereof on July 15, 1966 at 11 A.M. and the same is APPROVED/DISAPPROVED AS TO FORM. Acknowledged.

Norman Elliott

Attorneys for Plaintiff [3762]